REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	JUNE 1996	Final Report (07-95 - 06-96)

4. TITLE AND SUBTITLE
AN EPIDEMIOLOGICAL STUDY COMPARING CROSS SECTIONAL DIFFERENCES BETWEEN BLACK AND WHITE BENEFICIARY POPULATIONS IN TRICARE REGION NINE

5. FUNDING NUMBERS

6. AUTHOR(S)
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8. PERFORMING ORGANIZATION REPORT NUMBER
32a-96

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
US ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL
BLDG 2841 MCCS HRA US ARMY BAYLOR PGM IN HCA
3151 SCOTT ROAD
FORT SAM HOUSTON TEXAS 78234-6135

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
APPROVED FOR PUBLIC RELEASE: DISBRIBUTION IS UNLIMITED

DTIC QUALITY INSPECTED 3

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*
THIS GRADUATE MANAGEMENT PROJECT EXAMINES THE MILITARY BENEFICIARY POPULATION IN TRICARE REGION NINE, SOUTHERN CALIFORNIA. DIRECT CARE INPATIENT RECORDS FOR FISCAL YEARS 1993, 1994, AND 1995 WERE REVIEWED TO DETERMINE IF THERE IS A RELATIONSHIP IN THE PREVALENCE OF DISEASE BETWEEN BLACK AND WHITE MILITARY BENEFICIARIES BASED ON RACE, GENDER, AGE, AND SOCIOECONOMIC STATUS (SES). THE DEFENSE MEDICAL INFORMATION SYSTEM (DMIS), AND THE RETROSPECTIVE CASE-MIX ANALYSIS SYSTEM WERE UTILIZED TO EXTRACT BASED ON THE DEMOGRAPHIC VARIABLES MENTIONED ABOVE. A LITERATURE REVIEW WAS CONDUCTED WHICH SUPPORTED THE FINDINGS. THE TOP 13 INTERNATIONAL CLASSIFICATION OF DISEASE, NINTHE REVISION, CLINIC MODIFICATION (ICD-9-CM) CODES BASED ON RECORDS ANALYZED IN BOTH RACIAL GROUPS AND WITHIN ALL THREE FISCAL YEARS WERE CHOSEN FOR COMPARISON. DIAGNOSES SUCH AS CHILDBIRTH, DRUG AND ALCOHOL DEPENDENCE OR SURGICAL INTERVENTIONS WERE DISQUALIFIED. THE DATA WAS ANALYZED BY RACE UTILIZING CHI SQUARE TO TEST FOR SIGNIFICANCE, ALPHA WAS SET AT .05, WITH 1 DEGREE OF FREEDOM. NINE DISEASE PROCESSES WERE SIGNIFICANT AT THE 95% CONFIDENCE LEVEL. THESE NINE DISEASE PROCESSES WERE FURTHER TESTED USING CONFIDENCE INTERVAL AND ODDS RATIO CALCULATIONS TO DETERMINE SIGNIFICANCE BETWEEN RACE, GENDER, AND AGE. THE DATA EXTRACTED FROM RCMAS TO BE UTILIZED AS SES VARIABLE WAS RENDERED UNUSEABLE. (TRUNCATED

14. SUBJECT TERMS	15. NUMBER OF PAGES 121
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
N/A	N/A	N/A	UL

US ARMY-BAYLOR UNIVERSITY
GRADUATE PROGRAM IN HEALTH CARE ADMINISTRATION

AN EPIDEMIOLOGICAL STUDY COMPARING CROSS-SECTIONAL DIFFERENCES BETWEEN BLACK AND WHITE BENEFICIARY POPULATION IN TRICARE REGION NINE

A GRADUATE MANAGEMENT PROJECT
SUBMITTED TO:

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IN PARTIAL FULFILLMENT OF CANDIDACY REQUIREMENTS FOR THE MASTERS DEGREE
OF HEALTH CARE ADMINISTRATION

BY

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JUNE 1996

19970501 113

ABSTRACT

This Graduate Management Project examines the military beneficiary population in TRICARE Region Nine, Southern California. Direct care inpatient records for fiscal years 1993, 1994, and 1995 were reviewed to determine if there is a relationship in the prevalence of disease between black and white military beneficiaries based on race, gender, age, and socioeconomic status (SES). The Defense Medical Information System (DMIS), and the Retrospective Case-Mix Analysis System were utilized to extract based on the demographic variables mentioned above. A literature review was conducted which supported the findings. The top 13 International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) codes based on records analyzed in both racial groups and within all three fiscal years were chosen for comparison. Diagnoses such as childbirth, drug and alcohol dependence or surgical interventions were disqualified. The data was analyzed by race utilizing Chi square to test for significance, alpha was set at .05, with 1 degree of freedom. Nine disease processes were significant at the 95% confidence level. These nine disease processes were further tested using confidence interval and odds ratio calculations to determine significance between race, gender, and age. The data extracted from RCMAS to be utilized as SES variable was rendered unuseable. All nine disease process were statistically significant between the two racial groups based on race and gender, or race, age, and gender. This study will serve as a baseline for an epidemiological analysis for all racial groups in Region Nine.

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I. Introduction

In 1992 health care costs in the United States exceeded 14 percent of the gross domestic product. Overall costs were $838 billion, or over $3,000 per person. Contributing factors such as inflation, advanced technology, specialization of disease and mostly the decrease in acute illness and the proportional increase in chronic disease have rocketed medical costs (Fries et al. 1993; Rakich, Longest, and Darr 1994).

One of the nation's largest health care systems is the Department of Defense's (DoD) Military Health Services System (MHSS). This system offers health services to approximately 8.3 million beneficiaries. For fiscal year 1995, DoD's budget for the MHSS was just over $15.2 billion, approximately 6 percent of the total defense budget. The budget consisted of: $6 billion in operations and maintenance funds for the direct care system, $5 billion for military personnel, $3.6 billion for the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), $330 million for procurement of medical equipment and supplies, and $319 million for construction. For fiscal year 1996, DoD has requested $15.5 billion to support the MHSS (Washington D.C.: GAO, 1995).

The MHSS's primary mission is wartime readiness. However, caring for families and retirees makes up the bulk of services. These non active duty beneficiaries comprise almost 80 percent of the total eligible for military health care (Washington D.C.: GAO, 1995).

Efforts to transform the MHSS to mirror managed care initiatives already in place in the private sector by controlling cost's, improving quality and increasing access led to the development of the military health care reform program known as TRICARE.

The features of the TRICARE program include distribution of medical treatment resources through a capitation-based methodology, a triple option plan in which beneficiaries have the opportunity to select a Health Maintenance Organization (HMO), a Preferred Provider Organization (PPO), or indemnity-type health care plan; and, a single, fixed price, at-risk contract to provide the flexibility required to ensure beneficiaries a quality, stable, and uniform health care benefit (Washington D.C.: GAO, 1995).

Often decisions regarding cost, quality, and access such as: availability of services; staffing and manpower requirements; financial expenditures; and, medical equipment and technology are based on the population the military treatment facility (MTF) serves. These populations based analyses' usually focus on age and gender of population served and previous services provided to that population.

Conditions which prompted the study

One of the goals of the TRICARE Region Nine Office of the Lead Agent is to capture a true assessment of the population they serve. To do this an epidemiological study or demographic analysis must be conducted that addresses not only age and gender, but racial and ethnic identification. Socioeconomic status is another important variable, but is not easily captured. Most studies that have previously been conducted focus on the active duty population and do not address family members and retirees. As noted above, the retiree and family member population accounts for approximately 80 percent of the beneficiary population and are often a less mobile community. Assumptions can be made that these non active duty beneficiaries will consume more

resources at a given medical facility and for longer periods of time.

TRICARE Region Nine's demographic boundary includes the entire Southern California basin extending north to Port Hueneme and east to Weed Army Base, serving a beneficiary population of approximately 710,461. There are 7 Army, Navy, and Air Force hospitals, 4 NAVCARE clinics and 2 freestanding medical clinics (Washington D.C.: GAO, 1995).

Based on 1994 data obtained from the Defense Medical Information System (DMIS) and Retrospective Case-Mix Analysis System (RCMAS) aggregated on a population of 688,985; the following racial and ethnic distinctions can be made:

Racial/ethnic group	percent of population
white (Caucasian)	43 %
unknown/none	33 %
black (Negroid)	10 %
Asian/Pacific Islander	7 %
Hispanic	6%
other	1%
American Indian/Alaskan	0.5%

Disparities in the distribution of beneficiaries by racial and ethnic categories in Region Nine can be found at all MTF's. Examples of variances reported, include:

MTF	Racial/ethnic group	population
Weed Army Base	black	21%
Vandenberg AFB	"	8%
San Diego	Asian/ Pac. Isl.	11%
Vandenberg AFB	"	1%
Weed Army Base	white	58%
March AFB	"	31%

The demographic breakdown for military beneficiaries by age groups for Region

Nine include:

Age group	population
0 - 4	8%
5 - 14	12%
15 - 17	3%
18 - 24	19%
25 - 34	15%
35-44	10%
45 - 64	19%
65 +	14%

Analyzing the beneficiary population by gender results in a finding of 55 percent male, and 45 percent female. The largest disparity can be found amongst the age group 18 - 24, where 32 percent of the population is female and 68 percent male.

To date, no research has been found that addresses a demographic analysis or epidemiological study on the military beneficiary population that addresses age, gender, racial/ethnic categories and socioeconomic status.

Statement of the problem

The problem at Region Nine TRICARE is that there is no population or community health assessment that identifies the beneficiary population based on a demographic analysis or epidemiological study. To set policy and plan programs it is vital that an assessment of the health of the population be conducted to determine whether health services are available, accessible, effective, and efficient (Page, Cole, and Timmreel 1984).

Literature Review

Four components of a health care delivery system are important: the environment,

the availability of resources and access to them, the design of health care organizations or facilities, and the measurement of health care outcomes and provider performance. These components are key issues for a systems approach to research and evaluation (Wan 1995). This study will focus on the measurement of health care outcomes.

Epidemiology

Epidemiology is the study of the determinants and distribution of health events in human populations (Page, Cole, and Timmreel 1984; Hennekens and Mayrent 1987). Utilizing biostatistical tools and methods, researchers can quantify the distribution and determinants of health events in groups of people rather than individuals. Conducting epidemiological studies provides answers to questions such as: What are the actual and potential health problems in a community? Who is at risk? Where and when do the cases occur? Which problems are declining or increasing over time? They also assist in planning health facilities, and related to the level and distribution of services available. This type of research provides hypotheses as to disease etiology for further study, and determines the health status of a population in a geographic area (Dever 1984, 1991; Page, Cole, Timmreel 1984; Hennekens and Mayrent 1987).

The distribution of health and disease in a population is a function of many characteristics and attributes of members. These factors can be grouped into three sets of variables: life style, social, and demographic (Dever 1984).

Life style refers to the individual and societal behavior patterns that are partially under individual control and influence personal health. The major behaviors include use of tobacco products, poor nutrition, lack of exercise, alcohol and drug abuse,

irresponsible use of motor vehicles, and irresponsible use of guns and other manifestations of violence (Dever 1984).

Social variables include socioeconomic status, marital status, occupational exposures, other environmental health hazards, and other family related characteristics. In all racial/ethnic groups, a lower educational level is associated with higher mortality. For example, white males with little education have a death rate 15 percent higher than the average and 64 percent higher than their counterparts with a higher education. The statistics for white females are far worse, 60 and 105 percent respectively. Most diseases are more frequent in single than married males and females. This is true for most cancers, cardiovascular diseases, tuberculosis, suicides, and venereal diseases. The exception to this is cancer of the cervix, which is more than twice as common among married women (Dever 1984).

Socioeconomic factors associated with poor health outcomes can be attributed to the disproportionate concentration of minorities among the ranks of the poor, the unemployed, or those employed in low paying/hazardous jobs and those with limited or no health insurance (Krieger, Rowley and Herman 1993; Airhihenbuwa 1995). The black community has the highest poverty rate, 32.7 percent, and 46 percent of black children live in poverty (Kohn 1995). Even among African Americans whose income is equivalent to the white population, many other factors, such as total assets, housing, prior socioeconomic status, and social mobility influence health status (Airhihenbuwa 1995). To adjust for socioeconomic status, studies typically use data based on educational level, family income and sometimes occupational rank.

Racial/ethnic origin, age and gender are the three main demographic variables that characterize the distribution of health and disease in a population. These three

demographic variables have had, and will continue to have a monumental impact on the delivery of health care in this country.

There are definite differences in mortality and morbidity amongst the races. In some cases diseases can be determined genetically, however most cases are related to socioeconomic status.

According to the 1990 Census, white non Hispanics comprise a majority of the population (80.3 percent). By the year 2050 this number is estimated to decrease to 53 percent. Blacks are the largest minority group at 12.1 percent, this has grown by 14.2 percent since 1980. Hispanics account for 9 percent of the United States population, followed by Asian and Pacific Islander at 3 percent, and Native American at 1.3 percent. Asian and Pacific Islander population grew by 200 percent between 1980 and 1990, and the Native American are younger, poorer, and less educated than the US population as a whole (Kohn 1995).

Generally blacks have higher mortality rates caused from hypertensive heart disease, cerebrovascular accidents, and tuberculosis. Infant mortality rates are twice as high for black infants as for white. Whites have higher death rates for arteriosclerotic heart disease, suicide, and leukemia. There is also a positive correlation in the differences in forms of cancer. Black females have a high incidence of cervical cancer and white females of breast cancer (Dever 1984; Krieger, Rowley, and Herman 1993).

Many similarities can be found between African Americans and Africans with regard to certain cultural codes and meanings in actions and behaviors. These behaviors can be found in choices and values assigned to foods, verbal communication

and the use of traditional healing, which are important in the development of health promotion and disease prevention programs (Airhihenbuwa 1995).

Public Law 101-527, enacted in 1990 was designed to improve the health of individuals of minority groups who are from disadvantaged backgrounds. Key points identified concerning minority health affairs include:

- Racial and ethnic minorities are disproportionately represented among individuals from disadvantaged backgrounds.
- The health status of individuals from disadvantaged backgrounds, including racial and ethnic minorities, in the United States is significantly lower than the health status of the general population of the United States.
- Minorities suffer disproportionately high rates of cancer, stroke, heart disease, diabetes, substance abuse, acquired immune deficiency syndrome, and other diseases and disorders.
- The incidence of infant mortality among minorities is almost double that for the general population.
- Blacks constitute approximately 3 percent of physicians and 2.7 percent of nurses in the United States.
- The number of individuals in the health profession who are from disadvantaged backgrounds should be increased for the purpose of improving the access of other such individuals to health services.

African American men have an increased mortality in 13 of the 15 leading causes of death. According to the US Department of Health and Human Services, life expectancy for African Americans is 6.2 years less than for Whites. The average White female lives 14 years longer than the average African American male (USDHHS 1990).

Medical needs of multiracial persons also impact health care delivery. A person of mixed ancestry brings forth increased disease potential. Not only do these factors increase disease processes, but they also makes it more difficult to find compatible bone marrow and organ donors (Clark 1995).

Age specific disease rates can be measured according to risk in a particular group, leading disease in each group, and age progression of a particular disease. Mortality rates in all age groups in the United States have declined since living standards have improved and medical advances in both the prevention and treatment of infectious diseases have occurred. As the birth rate declines and the population progressively ages, the over 65 will be the fastest growing group in the United States. Those over the age of 85 will grow 3 to 4 times faster than any other age group (Frank-Stromborg 1991).

The "graying of America," has a significant impact on the delivery of health care as elderly people utilize a disproportionate amount of medical services. Morbidity and mortality for the elderly often stem from chronic diseases that developed early in life and worsened with age. The ten most chronic conditions found in the elderly population are: arthritis, hypertension, hearing, heart disease, orthopedic impairment, sinusitis, visual impairment, diabetes, and varicose veins (Dever 1991).

The leading cause of death in infancy is usually congenital and related to immaturity. Amongst children and adolescents are accidents, infectious diseases, suicide and homicide, alcohol and drug abuse. These death patterns are replaced by chronic diseases, mostly heart, stroke and cancer as one grows older (Dever 1984).

The third demographic variable that affects health care delivery is gender. Males and females have different mortality and morbidity patterns. Mortality rates are generally higher in males, and morbidity rates higher in females. This can be attributed to the fact that some diseases have a less lethal effect on women than men,

or that women seek medical care at an earlier stage of a disease process (Dever 1984).

Women and men have different disease risks not only due to differences in reproductive organs, but also because of differences in their social roles, which can either benefit or hinder health status. Women often have the primary responsibility of raising children and performing domestic labor. Within minority families women often have been socialized into the role as caretaker for the extended family too (Krieger, Rowley, and Herman 1993).

The impact of the generation of baby boomers needs to be addressed. One third of the population of the United States (76.4 million) were born between 1946 and 1964 (Dever 1991). L. Y. Jones best describes this gorge in his book Great Expectations: America and the Baby Boom Generation, "as a moving bulge in the population that, like a pig swallowed by a python, causes stretch marks and discomfort along the way," (1982).

In 1996, the hilt of the baby boomers turned 50. It is projected that there will be an increase in the number of motor vehicle accidents, homicides, suicides, depressions, and heart diseases. During the early 2000s, it is expected that there will be a similar increase in the prevalence of cancer, heart disease, stroke, and respiratory conditions. Death rates will start increasing in 2020, as approximately 15% of the population will be over 65 years of age (Dever 1991).

Health Promotion/Disease Prevention

Many programs initiated within the realm of health care reform have created new problems, such as reduced access, increased costs, rationing, or adverse economic effects on small business. Undeniably, the greatest impact towards reducing health

care costs is by reducing the need and demand for medical services (Fries et al. 1993). A collaborative effort on disease prevention and individual responsibility lessens the demand for medical care consequently reducing cost and improving on health outcomes.

Health promotion can be defined as "the process of fostering awareness, influencing attitudes, and identifying alternatives so that individuals can make informed choices and change their behavior to achieve an optimum level of physical and mental health and improve their physical and social environment" (Cumulative Index to Nursing and Allied Literature [CINAHL] 1995, 118). "Disease prevention focuses on identified groups at risk for particular problems by providing services to prevent those problems from occurring or becoming more serious" (Redland and Stuifbergen 1993, 428). Thus, health promotion emphasizes individual behavior modification, while disease prevention recognizes services to an identified population (Bibb 1995).

Approximately 70 percent of all illness and the associated costs are preventable. The literature is well documented with studies that have proven the accolades of health promotion/disease prevention programs. Preventable causes of disease account for eight of the nine leading categories and for 980,000 deaths per year (McGinnis and Foege 1992). Breslow and Breslow (1993) clearly demonstrated that poor health habits are strongly associated with greater burdens of illness with a similar effect on mortality (Fries et al. 1993). Other studies have conclusively shown that poor health habits resulting from lifestyle, environment, and biology can lead to high risk factors that can be attributed to increased disease (Frank-Stromborg 1991; Nickens 1990; Fries et al. 1993; Krieger, Rowley, and Herman 1993; Montgomery

and Pokras 1993; Montes, Eng, and Braithwaite 1995; USDHHS 1990 and 1995; Neighbors, Braithwaite, and Thompson 1995; Friedman 1995; Carlson 1995; Kohn 1995).

Racial and Ethnic Categories

Statistical Directive 15, issued in 1978 by the Office of Management and Budget, set forth the Racial and Ethnic Standards for Federal Statistics and Administrative Reporting. This policy provided standardized categories for the collection of data on race and ethnicity (Lott 1993; Schmidt 1995).

Five basic racial and ethnic categories were established: American Indian or Alaskan Native, Asian or Pacific Islander, Black, Hispanic and White. This demographic information including the category "other," can be found on most papers collecting vital statistics. All reflect the capacity to measure the condition of the population. The resulting statistics accumulated from this data has supported the enactment of affirmative action and a wealth of other social programs. An integral segment of law has been written predicated on many of these measurements, such as civil rights law and voting rights law.

Since the establishment of Statistical Directive 15, the population of the United States has become more heterogeneous, including the emergence of more mixed race Americans, which has created an insurgence of secondary ethnicity. Immigrant populations and their American born cousins may be similar or different in socioeconomic and demographic characteristics such as age, household structure, family composition, fertility rates, education, income and language (Lott 1993). US Census Bureau estimates more than 1 million children live in interracial households, while the number of interracial marriages has tripled since 1970 (Schmidt 1995).

Minority groups such as Project RACE, a multiracial organization out of Atlanta is lobbying to add a "multiracial" box to the 2000 Census and other documents. This organization sees anything less as a denial of civil rights. By not having a multiracial box, it is asking a multiracial person to deny one of their parents (Schmidt 1995).

Several traditional civil rights groups fear that this proposal can have disastrous consequences. According to government estimates, up to 90 percent of those Americans who check the "black" box on the census can technically qualify as multiracial. This has the potential to endanger civil rights law and undermine some of the hard fought gains made by minorities since the 1960's (Schmidt 1995).

Other minority groups are lobbying for their own census box. Native Hawaiians do not want to be classified as Pacific Islanders; some Arab-Americans groups are insulted to be classified as white; East Indians are grouped with other Asians; Cape Verdians a group of Portuguese-Africans want their own box too (Lott 1993; Schmidt 1995). There are major problem with racial categories, they are not coextensive with any existing ethnic group (Crews and Bindon 1991).

Retrospective Case Mix Analysis System (RCMAS) data can be retrieved by both racial and ethnic categories. Racial groupings include: White (Caucasoid), Black (Negroid), Yellow (Mongolian), Red (American Indian/Alaska Native), Other, and Unknown/none. Ethnic groupings include Hispanic (Black and White), Southeast Asian, Filipino, Asian/Pacific Islander, American Indian/Alaskan Native, Other, and Unknown/none.

The need for a better classification system is evident when retrieving data from RCMAS. Based on 1994 figures, 34 percent of the direct care inpatient visits in Region Nine were classified by racial group as unknown or other. Comparisons between both ethnic and racial grouping are ambiguous. Data within the ethnic group

of Hispanic, does not delineate white or non white. Data retrieved for the same fiscal year in the racial group of mongoloid and that in the ethnic groups of SE Asian, Filipino, Pacific Islander and Asian do not equate.

Cultural Awareness and it's Impact on Health Care Delivery

Focusing on the biological aspects of disease typically found in western medicine usually excludes consideration of cultural, social, and psychological dimensions of health (Clark 1995). Greater awareness and cultural sensitivity can decrease cultural conflict and enhance compliance and health outcomes. Cultural conflict occurs when members of different ethnic classes with incompatible cultural patterns interact. This conflict may occur because of differences in race or ethnicity, social class, and the medical versus nonmedical perspective (Erkel 1980; Brink 1984; Lewis et al. 1984; Miller 1987; Henkle and Kennerly 1990; Livingston 1994 ; Azevedo 1995).

Purpose variables and working hypotheses

The purpose of this study is to determine if there is a difference in the prevalence of disease that can be associated in the military beneficiary population based on racial/ethnic group, age, gender, and socioeconomic categories. In comparison to the civilian sector, beneficiaries of the Military Health Services System (MHSS) generally are healthier, have better access to care, and there is no definable population that meets the criteria of living below poverty levels. For the purpose of this Graduate Management Project, only the two largest beneficiary categories that of white and black populations will be analyzed. By comparing these populations it will establish if within the Military Health Services System a prevalence of disease can be identified in a particular population group.

#1

HO: There is no relationship in the prevalence of disease between black and white military beneficiaries in TRICARE Region Nine based on racial/ethnic categories.

HA: There is a significant relationship in the prevalence of disease between black and white military beneficiaries in TRICARE Region Nine based on racial/ethnic categories

#2

HO: There is no relationship in the prevalence of disease between black and white military beneficiaries in TRICARE Region Nine based on gender.

HA: There is a significant relationship in the prevalence of disease between black and white military beneficiaries in TRICARE Region Nine based on gender.

#3

HO: There is no relationship in the prevalence of disease between black and white military beneficiaries in TRICARE Region Nine based on age.

HA: There is a significant relationship in the prevalence of disease between black and white military beneficiaries in TRICARE Region Nine based on age.

#4

HO: There is no relationship in the prevalence of disease between black and white military beneficiaries in TRICARE Region Nine based on

socioeconomic status.

HA: There is a significant relationship in the prevalence of disease between black and white military beneficiaries in TRICARE Region Nine based on socioeconomic status.

II. Method and procedures

Subjects

To determine if there is a difference in the prevalence of disease patterns between military beneficiary categories in Region Nine TRICARE catchment area, a demographic profile must be conducted utilizing the Retrospective Case Mix Analysis System (RCMAS) for all military beneficiaries living in this region. Fiscal year (FY) 1993, 1994, and 1995 data can be accessed locally. Fiscal year 1990, 1991, and 1992 can only be accessed through Vector Research. The data to be profiled from the RCMAS data base will be inclusive of Direct Care inpatient visits to establish morbidity disease patterns. Population totals will be extracted from Defense Management Information Systems (DMIS). The manipulation of this data is the crucial portion of this analysis.

Project Design and Data Sources

The demographic profile was produced by utilizing data obtained from RCMAS and DMIS. A distribution chart was constructed to show how many sponsors and dependents fall into the eligibility categories of Active Duty, Retired, Survivor, and Other. This distribution was further delineated by age group categories for both Black and White populations. The charts and subsequent graphs are for FY 1993, 1994, and 1995, displayed in Appendix A.

Data was retrieved from RCMAS based on patients admitted in the Direct Care system, for the appropriate fiscal year in Region Nine. The data was then categorized

by principal diagnosis, race, gender, age group, and sponsor's rank. The sponsor's rank was used to determine socioeconomic status. When retrieving reports from RCMAS, you may select only 3 categories, therefore 3 separate reports must be compiled for each fiscal year. The data that was retrieved based on sponsor's rank listed approximately 58% of sponsor's rank as unknown, and therefore was rendered unusable.

For fiscal years 1990, 1991, and 1992, a special request had to be submitted to Vector Research in Rockville, MD. This request took approximately 2 months to receive, and the data was incorrect and rendered unusable. Due to the time frame to complete this project, FY 1993, 1994, and 1995 are utilized.

Once the data was downloaded from RCMAS, it had to be converted into an Excel spreadsheet file. This process truncated the leading zero's of the principal diagnosis category. Each principle diagnosis had to be manually verified using St. Anthony's ICD-9-CM code book, 1995 (International Classification of Disease, Ninth Revision, Clinical Modification). This was an extremely time consuming process. Once the ICD-9-CM codes were corrected, the file was sorted and records were calculated based on the first three digits of the ICD-9 code.

The spreadsheets were then sorted again and ranked in ascending order based on total records analyzed. Appendix B is a compilation of the top 50+ ICD-9 codes per each year group based on race.

The top 13 ICD-9-CM codes based on records analyzed in both racial groups and within all three fiscal years were chosen for comparison. Diagnoses such as childbirth, drug and alcohol dependence or surgical interventions were disqualified. The following ICD-9-CM categories were chosen: Diabetes Mellitus, 250; Tonsils and Adenoids, 474; Diseases of Synovium/Tendon/Bursa, 727; Pneumonia, 486; Cataracts,

366; Otitis Media, 381; Heart Disease, 401-429; Cerebrovascular Disease, 430-438; Asthma, 493; Diseases of Esophagus, 530; Inguinal Hernia, 550; Gallbladder, 574; Cellulitis & Abscess, 682.

To compare records analyzed for black and white patients in a given fiscal year a Chi square test was chosen to test for significance. Alpha was set at .05 with 1 degree of freedom. The value for 95% confidence was 3.84.

Confidence intervals were calculated between the races to identify important differences. Confidence limits that did not overlap were considered indicative of a statistically significant difference and were used to characterize the nature of that difference.

Odds ratio calculations were conducted to determine if there were differences between the races based on gender. Additionally, 5 disease categories were selected based on records analyzed ($n > 30$) and equivocal age dispersion, for odds ratio calculations based on gender and age group.

Ethical Considerations

The ethical rights of the patients were protected throughout the study. All information was extracted through RCMAS was necessary data. The coded information did not have any unique identifiers and cannot be associated to individual military beneficiaries. In the construction of all charts, graphs and statistical testing, all records were scrutinized for completeness, and records that were missing pertinent data elements were eliminated from the study.

III. Results

The eligible beneficiary population in Region Nine is spread throughout Southern California. The total beneficiary population for racial groups black and white in FY

1993 was 383,247; FY 1994 was 367,571; and, FY 1995 was 362, 219 as noted in Appendix A.

Of the 13 disease categories examined the following 4 disease categories did not meet the requirements for significance utilizing Chi square testing: Diabetes Mellitus, 250; Tonsils and Adenoids, 474; Diseases of Synovium/Tendon/Bursa, 727; and Pneumonia, 486. The remaining 9 disease categories: Cataracts 366; Otitis Media 381; Heart Disease 401-430; Cerebrovascular Disease 430-438; Asthma 493; Disease of Esophagus 530; Inguinal Hernia 550; Gallbladder 574; and, Cellulitis & Abscess 682; did show significance and warranted further study. Results of Chi square, confidence intervals, and odds ratio's are listed in Appendices C through K.

IV. Discussion

ICD-9-CM 366 Cataracts

White beneficiaries were more likely to have Cataracts then black beneficiaries. The prevalence of this disease ranged from 3.97 in 1994 to 6.11 times more likely in 1995. Of that, significance was noted between the races, but not necessarily within a particular racial group. Disparity was also found in dispersion by age group. Within the white beneficiary category, records appeared in age groups of 0-4, and 5-14 that were not apparent in the black beneficiary category. This can be attributed to recording error, or also can be attributed to trauma, or complications due to other disease processes such as Down's Syndrome. All calculations are noted in Appendix C.

Calculation of confidence intervals were compared between the races, which did not overlap and were considered indicative of a statistically significant difference. Odds ratio's were not computed by age category, due to minimal number of records

analyzed. Therefore, the results of this study for this disease category were statistically significant between the two racial groups based on race and gender.

ICD-9-CM 381 Otitis Media

White beneficiaries were approximately 2 times more likely to have Otitis Media than black beneficiaries in all three year groups. The same is true when calculating the odds ratio between the races, but not true within the same racial group. Records were found mostly in age groups 0-4 and 5-14 in both racial groups. No records were found for ages above 15 in the black population. This is an extremely rare circumstance especially to be found in all three year groups, which warrants further study . All calculations are noted in Appendix D.

Calculation of confidence intervals were compared between the races, which did not overlap and were considered indicative of a statistically significant difference. Odds ratio's were not computed by age category, due to minimal number of records analyzed. Therefore, the results of this study for this disease category were statistically significant between the two racial groups based on race and gender.

ICD-9-CM 401-429 Heart Disease

The records found in ICD-9 codes 401 through 429 were combined to assess the prevalence of heart disease, and not focus on one particular attribute of heart disease. Records analyzed were found in all age groups in the white population, but only two were found in age groups 0-4, 5-14, and 15-17 in the black population.

Based on odds ratio calculations the white beneficiary population is more likely to have heart disease ranging from 1.9 times more likely in 1994 to 2.54 times more likely in 1995, then black beneficiaries. Similar comparisons can be made between the racial groups. Within the racial groups white males were 1.4 to 1.6 more likely to have heart disease than white females, and noted in 1994 and 1995 data black males

were 2.4 and 1.9 times more likely than black females to have heart disease.

The odds ratio's were further aggregated into age groups starting with the 18-24 year group. Overall, whites were more likely than blacks to heart disease, although in 1994 blacks were more likely to have heart disease than whites in age groups 25-34 and 45-64. All calculations are noted in Appendix E.

Calculation of confidence intervals were compared between the races, which did not overlap and were considered indicative of a statistically significant difference. Odds ratio's were not computed by age category, due to minimal number of records analyzed. Therefore, the results of this study for this disease category were statistically significant between the two racial groups based on race, and gender.

ICD-9-CM 430-438 Cerebrovascular Disease

The records found in ICD-9 codes 430 through 438 were combined to assess the prevalence of cerebrovascular disease, and not focus on one particular attribute of this disease. Records analyzed were found in all age groups in the white population except ages 15-17. No records were found in age groups 0-4, 5-14, and 15-17 in the black population.

Odds ratio calculations revealed that white beneficiaries were more likely to have cerebrovascular disease than black beneficiaries. These ratio's ranged from 1.54 in 1993 to 2.05 in 1995. White males were generally more likely to have the disease than black males or white females. Calculation for 1994 data determined that black males were 1.85 times more likely than black females to have cerebrovascular disease. All calculations are noted in Appendix F.

Calculation of confidence intervals were compared between the races, which did overlap by .43, but not in 1994 and 1995 and were considered indicative of a statistically significant difference. Odds ratio's were not computed by age category,

due to minimal number of records analyzed. Therefore, the results of this study for this disease category were statistically significant between the two racial groups based on race, and gender.

ICD-9-CM 493 Asthma

Asthma was the only disease category that black beneficiaries exceeded white beneficiaries in the confidence interval calculation and all aspects of the odds ratio calculation based on race, gender, and all age groups. Black were 1.66 to 2.18 times more likely than whites to be admitted as an inpatient for asthma. Between the racial groups black males were 1.6 to 2.28 times more likely than white males to have asthma, and black females were 1.6 to 2.07 times more likely than white females to have asthma. All calculation are noted in Appendix G.

Calculations within racial groups were not as significant. Age group calculations were significant in all groups with the most significant in the 1995 data for age group 35-44. Black were 9.46 times more likely than whites within this age group to have asthma. Calculation of confidence intervals were compared between the races, which did not overlap and were considered indicative of a statistically significant difference. Therefore, the results of this study for this disease category were statistically significant between the two racial groups based on race, age, and gender.

ICD-9-CM 530 Disease of Esophagus

White beneficiaries were more likely to have disease of the Esophagus then black beneficiaries. This disease was one of the few that showed a declining odds ratio for the three year period. In 1993 whites were 2.8 times more likely than blacks to have the disease, and 1.8 and 1.6 times more likely in 1994 and 1995 respectively. Of that, significance was noted between the races, and within racial groups. White males were

1.2 to 1.9 times more likely than white females to have the disease, and black males were 1.1 to 2.54 times more likely than black females to have the disease.

This disease was found in all age groups in both races except for age group 15-17 in blacks. Calculation of confidence intervals were compared between the races, which overlapped in year 1995 by .99, but was considered indicative of a statistically significant difference. All calculations are noted in Appendix H.

Odds ratio's were not computed by age category, due to minimal number of records analyzed. Therefore, the results of this study for this disease category were statistically significant between the two racial groups based on race and gender.

ICD-9-CM 559 Inguinal Hernia

Inguinal Hernia was the only disease category that had records analyzed in both races, both genders, all age groups, for all three years. Whites were approximately 1.5 more likely than blacks to have Inguinal Hernia's. Within racial groups, black males were from 3.9 to 5.9 times more likely than black females to have Inguinal Hernia's, and white males were 9.7 to 11.5 times more likely than white females. Across gender black females were 1.2 to 1.66 times more likely than white females to have Inguinal Hernia's and white males were 1.5 times more likely than black males.

In all three year groups, black males in age group 0-4 were 1.9 times more likely to Inguinal Hernia's than white males. The 5-14 age group had minimal differences, but the 15-17 year group, blacks once again were 1.9 to 2.2 times more likely to have Inguinal Hernia's. In age group 18-24, whites were 2.3 to 5.9 times more likely than blacks, and in 1995 age group 25-34, whites were 2.7 times more likely than black to have Inguinal Hernia's. The remaining three age groups did not follow any patterns for the three year period. All calculations are noted in Appendix I.

Calculation of confidence intervals were compared between the races, which did not overlap and were considered indicative of a statistically significant difference. Therefore, the results of this study for this disease category were statistically significant between the two racial groups based on race, age, and gender.

CD-9-CM 574 Gallbladder

White beneficiaries were 1.8 to 2.35 times more likely than black beneficiaries to have Gallbladder disease. In both racial groups there were no records analyzed in the 0-4 age group. White males were 2.4 to 5.09 times more likely than black males to have the disease, and white females 1.7 to 2.04 times more likely than black females to have the disease. Within gender, black females were 5.2 to 9.6 times more likely than black males, and white females 3.5 to 3.9 times more likely than white males to have the disease. Across all age groups whites were more likely to have the disease than blacks. All calculations are noted in Appendix J.

Calculation of confidence intervals were compared between the races, which did not overlap and were considered indicative of a statistically significant difference. Therefore, the results of this study for this disease category were statistically significant between the two racial groups based on race, age, and gender.

ICD-9-CM 682 Cellulitis & Abscess

White beneficiaries were 1.6 to 2.5 times more likely than black beneficiaries to have Cellulitis and Abscesses. White males were 1.9 to 2.3 times more likely than black males, and white females were 1.2 to 3.8 times more likely than black females to have the disease. Within the racial groups white males were 2.1 to 2.3 times more likely than white females, and black males 1.05 to 4.07 times more likely than black females to have the disease. Within most age groups white were 1.07 to 3.7 times more likely than black to have the disease. The exception is in 1994 blacks were 2.23

and 3.9 times more likely in age groups 35.44 and 45.64 respectively. All calculations are noted in Appendix K.

Calculation of confidence intervals were compared between the races, which did not overlap and were considered indicative of a statistically significant difference. Therefore, the results of this study for this disease category were statistically significant between the two racial groups based on race, age, and gender.

V. Conclusions and Recommendations

This study examined the prevalence of disease's within racial groups to assess if there is a difference based on race, age, and gender. The random choosing of 13 diagnoses and the subsequent statistical analysis identified that there is a difference that warrants further investigation.

As health care organizations take responsibility for a population's health under a captivation payment system, the financial incentive shifts from inducing customers to use expensive services to less expensive services. As a result hospitals have become more involved in health promotion programs. Promotion of healthy lifestyles is a means to reduce demand for expensive, acute care services. These programs will become routine for managed care organizations.

Wellness focused care necessitates redefining the health service, particularly with regard to health promotion, disease prevention, social intervention, and public health. Changes to wellness care requires restructuring the illness care organization into a wellness care system, inclusive of early, preventive interventions by primary care providers (Issel and Anderson 1996).

Due to the significant shift from inpatient care to managed health in an ambulatory setting the true measure of disease in a population may no longer be ideal to be

assessed by inpatient data. Further assessment needs to be conducted utilizing outpatient diseases diagnosis, without subsequent visits. As mentioned in the Literature Review it is often necessary to perform demographic and epidemiological studies over a period of time to analyze for secular trends. This study is intended to establish a baseline for which future studies can be conducted, and comparisons analyzed.

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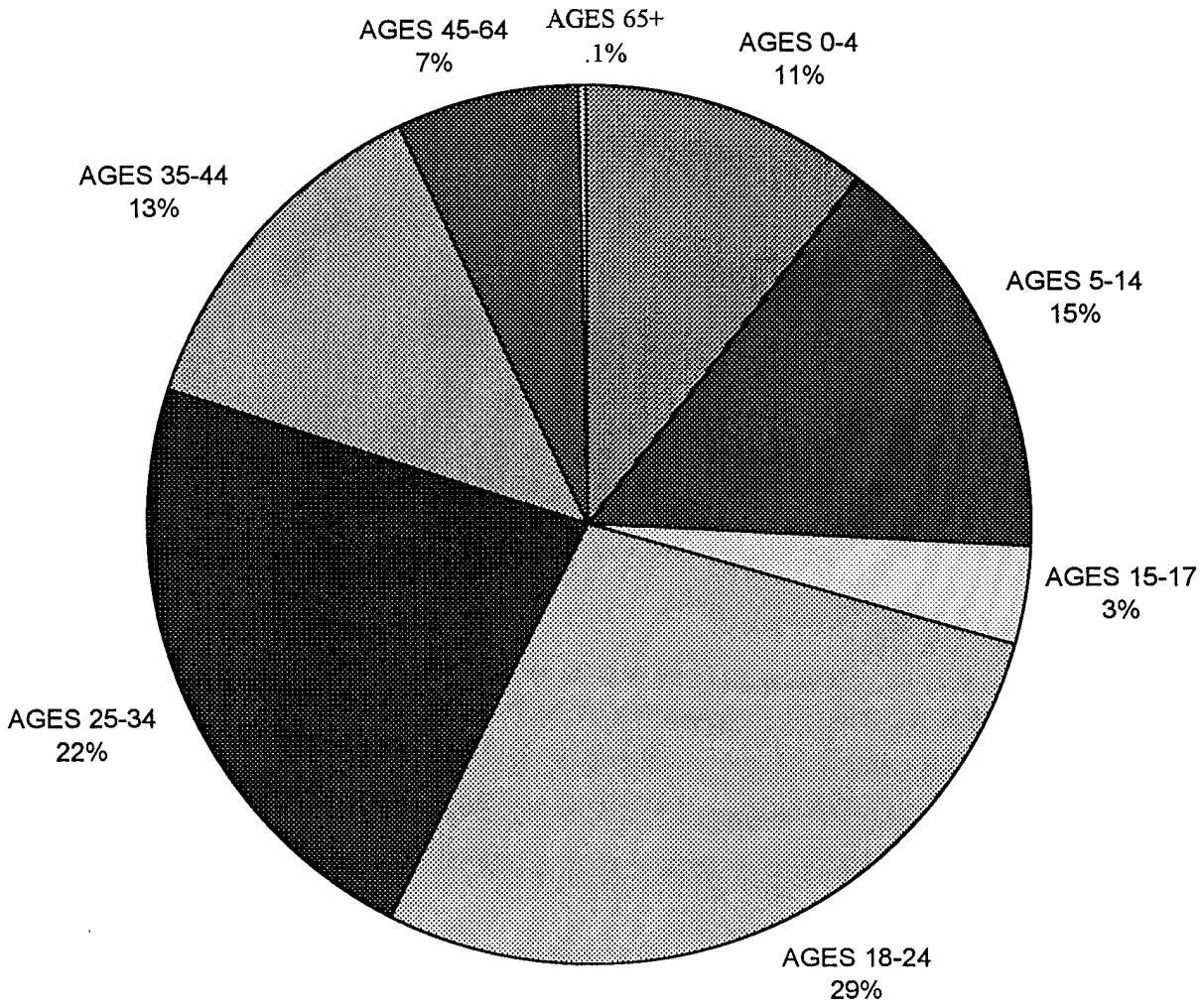
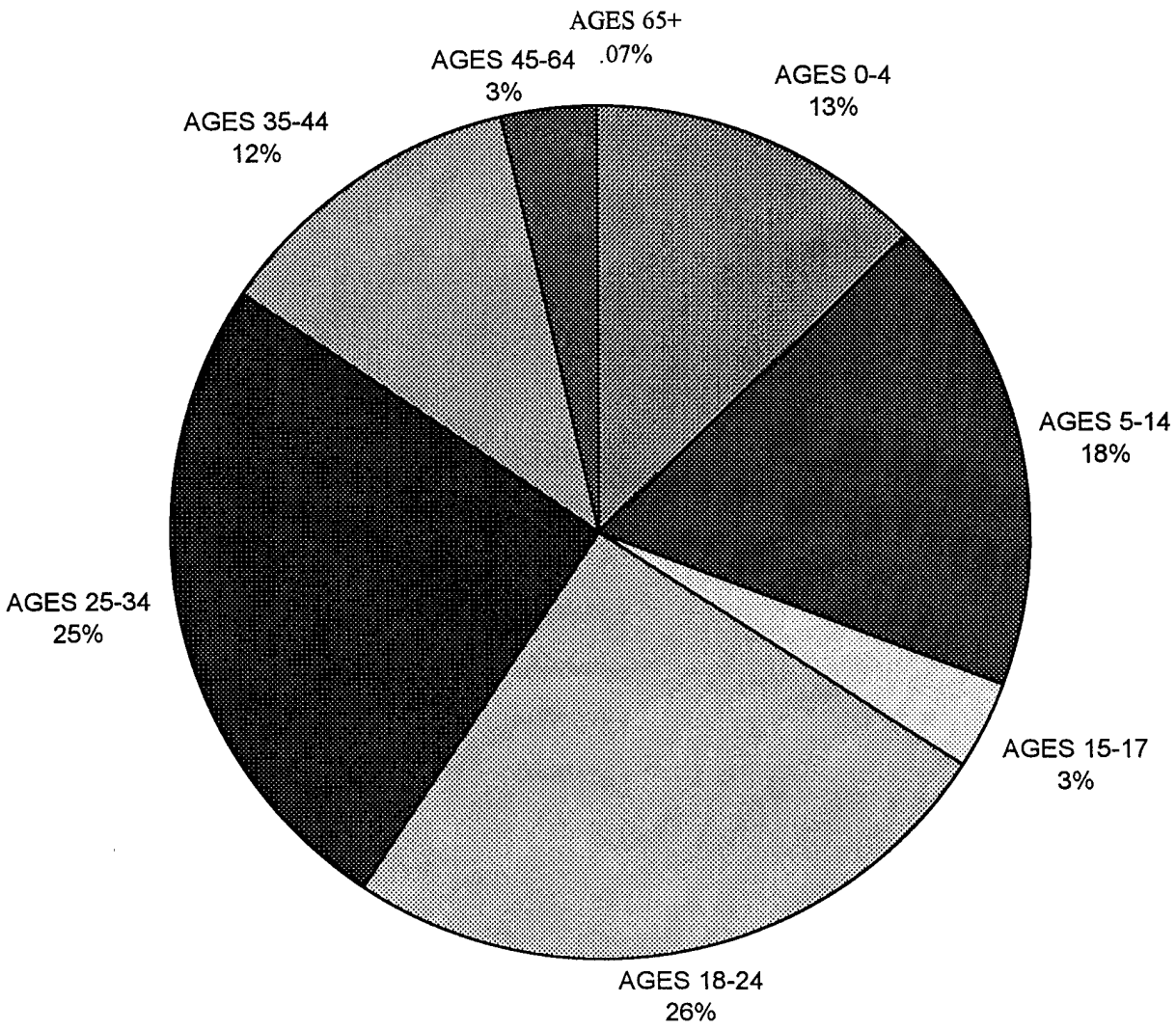
Appendix A

DEERS [1993]		HEALTH SERVICE REGION: 09								
WHITE										
GENDER	AGE GROUP	AD	AD FAMILY	GUARD/ RESERVE	GUARD/ RES. FAMILY	RETIRED	RETIRED FAMILY	SURVIVOR	OTHER	TOTAL
FEMALE	AGES 0-4	0	15193	0	409	0	483	34	60	16179
FEMALE	AGES 5-14	0	19535	0	775	0	3074	96	65	23545
FEMALE	AGES 15-17	4	3196	7	176	0	1954	32	10	5379
FEMALE	AGES 18-24	3774	17735	126	395	14	2424	71	73	24612
FEMALE	AGES 25-34	3097	24995	153	686	64	780	92	128	29995
FEMALE	AGES 35-44	1282	12091	103	547	181	4834	92	58	19188
FEMALE	AGES 45-64	131	2717	29	184	181	6041	88	8	9379
FEMALE	AGES 65+	0	160	0	3	2	252	8	0	425
MALE	AGES 0-4	0	15609	0	422	0	484	35	57	16607
MALE	AGES 5-14	0	20147	0	764	0	3135	101	88	24235
MALE	AGES 15-17	290	2986	54	196	0	1950	20	12	5508
MALE	AGES 18-24	56950	2386	1060	128	89	2536	34	62	63245
MALE	AGES 25-34	36804	889	971	37	418	39	0	137	39295
MALE	AGES 35-44	16146	452	760	36	4601	43	1	61	22100
MALE	AGES 45-64	2070	219	255	23	8635	45	0	4	11251
MALE	AGES 65+	3	53	0	3	80	17	0	0	156
									Total	311099
BLACK										
GENDER	AGE GROUP	AD	AD FAMILY	GUARD/RESERVE	GUARD/RES. FAMILY	RETIRED	RETIRED FAMILY	SURVIVOR	OTHER	TOTAL
FEMALE	AGES 0-4	0	4265	0	99	0	131	9	16	4520
FEMALE	AGES 5-14	0	5691	0	161	0	664	32	17	6565
FEMALE	AGES 15-17	3	836	6	32	0	319	5	2	1203
FEMALE	AGES 18-24	1341	3690	38	60	8	433	10	17	5597
FEMALE	AGES 25-34	1200	6390	68	167	26	215	34	31	8131
FEMALE	AGES 35-44	387	2456	48	76	58	886	13	6	3930
FEMALE	AGES 45-64	16	359	6	17	17	702	18	1	1136
FEMALE	AGES 65+	0	26	0	3	0	17	1	0	47
MALE	AGES 0-4	0	4379	0	93	0	129	8	14	4623
MALE	AGES 5-14	0	5648	0	184	0	690	30	17	6569
MALE	AGES 15-17	75	778	5	31	0	330	5	1	1225
MALE	AGES 18-24	11299	624	173	24	22	361	6	10	12519
MALE	AGES 25-34	9188	352	203	16	133	10	1	31	9934
MALE	AGES 35-44	3485	122	138	10	1037	6	1	6	4805
MALE	AGES 45-64	202	27	33	7	1059	7	0	0	1335
MALE	AGES 65+	0	6	0	0	2	1	0	0	9
									Total	72148

1993 Region Nine Beneficiary Population (White)

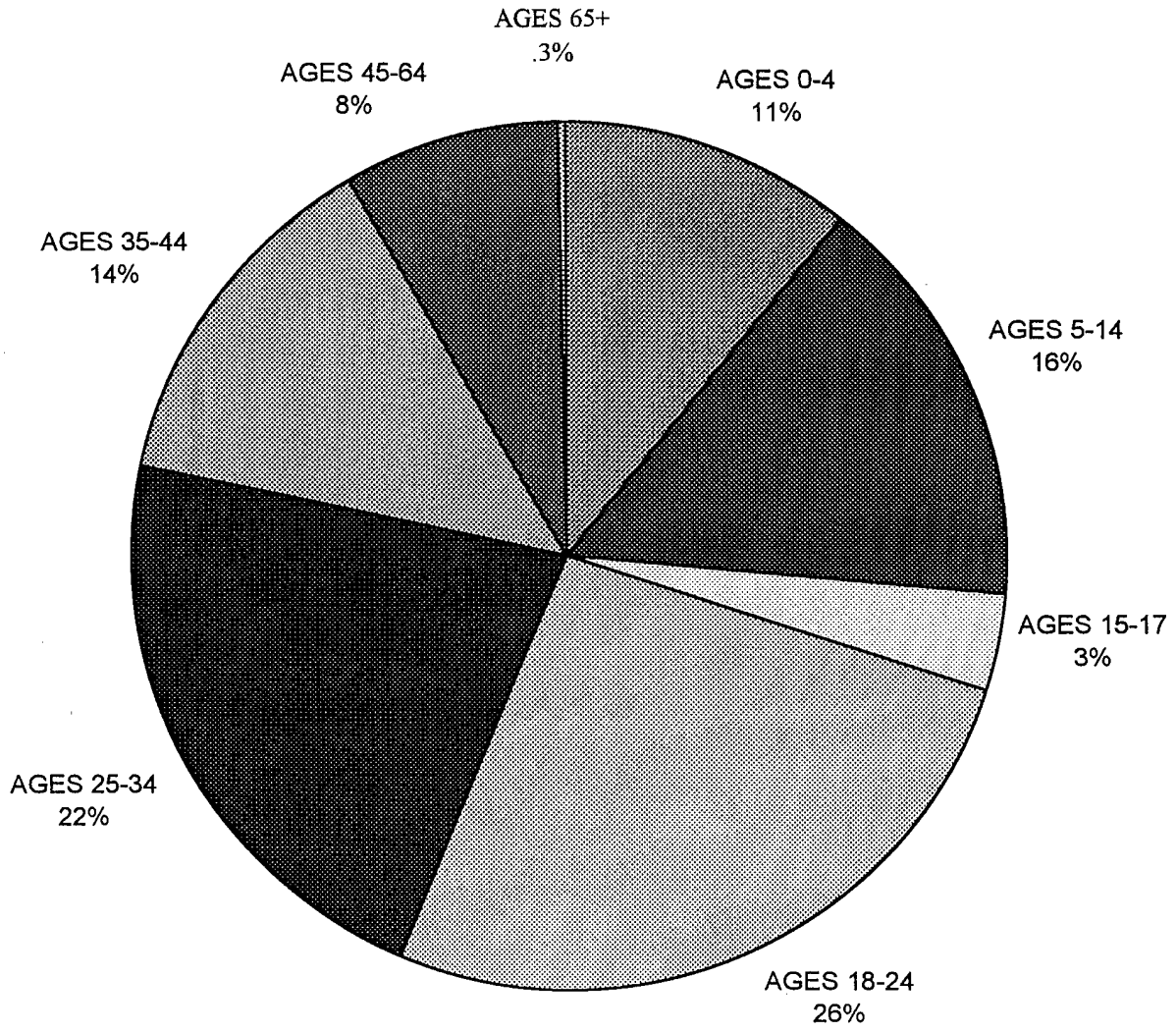


1993 Region Nine Beneficiary Population (Black)

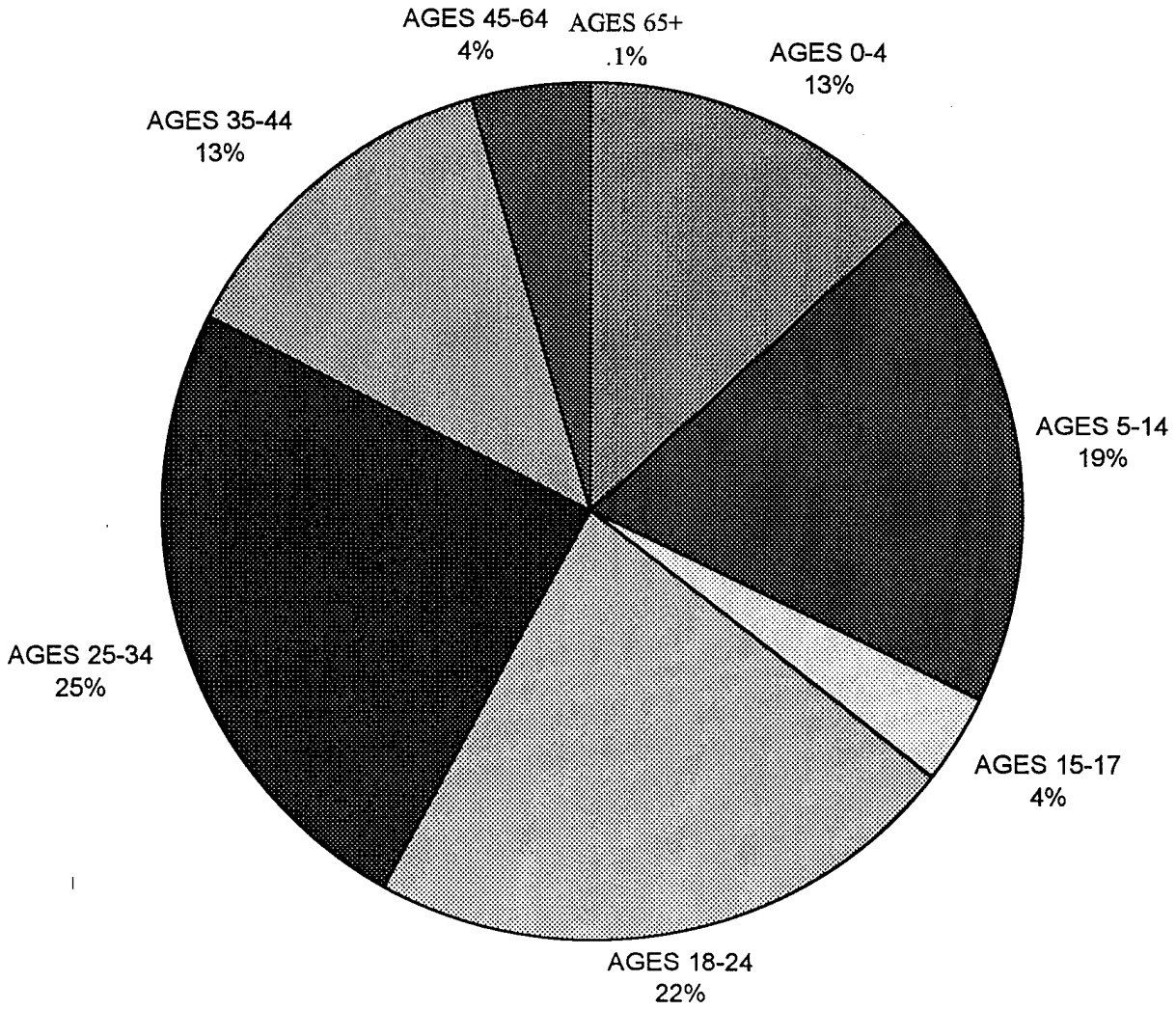


DEERS [1994]	HEALTH SERVICE REGION: 09									
WHITE										
AGE GROUP	GENDER	AD	AD FAMILY	GUARD/RESERVE	GUARD/RES FAMILY	RETIRED	RETIRED FAMILY	SURVIVOR	OTHER	TOTAL
AGES 0-4	FEMALE	0	14433	0	374	0	576	27	103	15513
AGES 5-14	FEMALE	0	18598	0	839	0	3656	120	118	23331
AGES 15-17	FEMALE	7	2905	2	162	0	2077	43	8	5204
AGES 18-24	FEMALE	3704	16690	124	344	15	2808	89	72	23846
AGES 25-34	FEMALE	2973	23975	135	607	62	931	85	210	28978
AGES 35-44	FEMALE	1212	11482	109	554	255	5272	108	46	19038
AGES 45-64	FEMALE	136	2629	21	205	212	7294	122	17	10636
AGES 65+	FEMALE	0	148	0	2	11	317	16	0	494
AGES 0-4	MALE	0	15347	0	395	0	584	28	110	16464
AGES 5-14	MALE	0	18906	0	799	0	3781	122	143	23751
AGES 15-17	MALE	131	2569	27	193	0	2116	14	8	5058
AGES 18-24	MALE	48882	2198	685	143	100	2795	37	58	54898
AGES 25-34	MALE	33966	839	804	33	509	42	1	262	36456
AGES 35-44	MALE	15123	426	680	41	5114	47	1	64	21496
AGES 45-64	MALE	1952	232	256	17	10366	73	1	31	12928
AGES 65+	MALE	1	56	0	1	375	16	0	0	449
									Total	298540
BLACK										
AGE GROUP	GENDER	AD	AD FAMILY	GUARD/RESERVE	GUARD/RES FAMILY	RETIRED	RETIRED FAMILY	SURVIVOR	OTHER	TOTAL
AGES 0-4	FEMALE	0	4106	0	102	0	177	13	26	4424
AGES 5-14	FEMALE	0	5515	0	197	0	842	36	32	6622
AGES 15-17	FEMALE	7	768	0	28	0	418	8	5	1234
AGES 18-24	FEMALE	1344	3347	35	64	5	493	12	17	5317
AGES 25-34	FEMALE	1153	6069	63	149	35	253	38	55	7815
AGES 35-44	FEMALE	391	2419	53	86	90	1033	23	13	4108
AGES 45-64	FEMALE	20	380	8	12	26	841	23	1	1311
AGES 65+	FEMALE	0	29	0	2	0	24	1	0	56
AGES 0-4	MALE	0	4240	0	95	0	181	7	28	4551
AGES 5-14	MALE	0	5420	0	196	0	863	37	41	6557
AGES 15-17	MALE	45	726	6	35	0	420	8	5	1245
AGES 18-24	MALE	8983	604	94	35	24	421	5	15	10181
AGES 25-34	MALE	8242	324	173	17	160	17	1	65	8999
AGES 35-44	MALE	3386	127	137	9	1257	15	1	14	4946
AGES 45-64	MALE	203	28	41	8	1354	6	0	2	1642
AGES 65+	MALE	0	8	0	0	13	2	0	0	23
									Total	69031

1994 Region Nine Beneficiary Population (White)

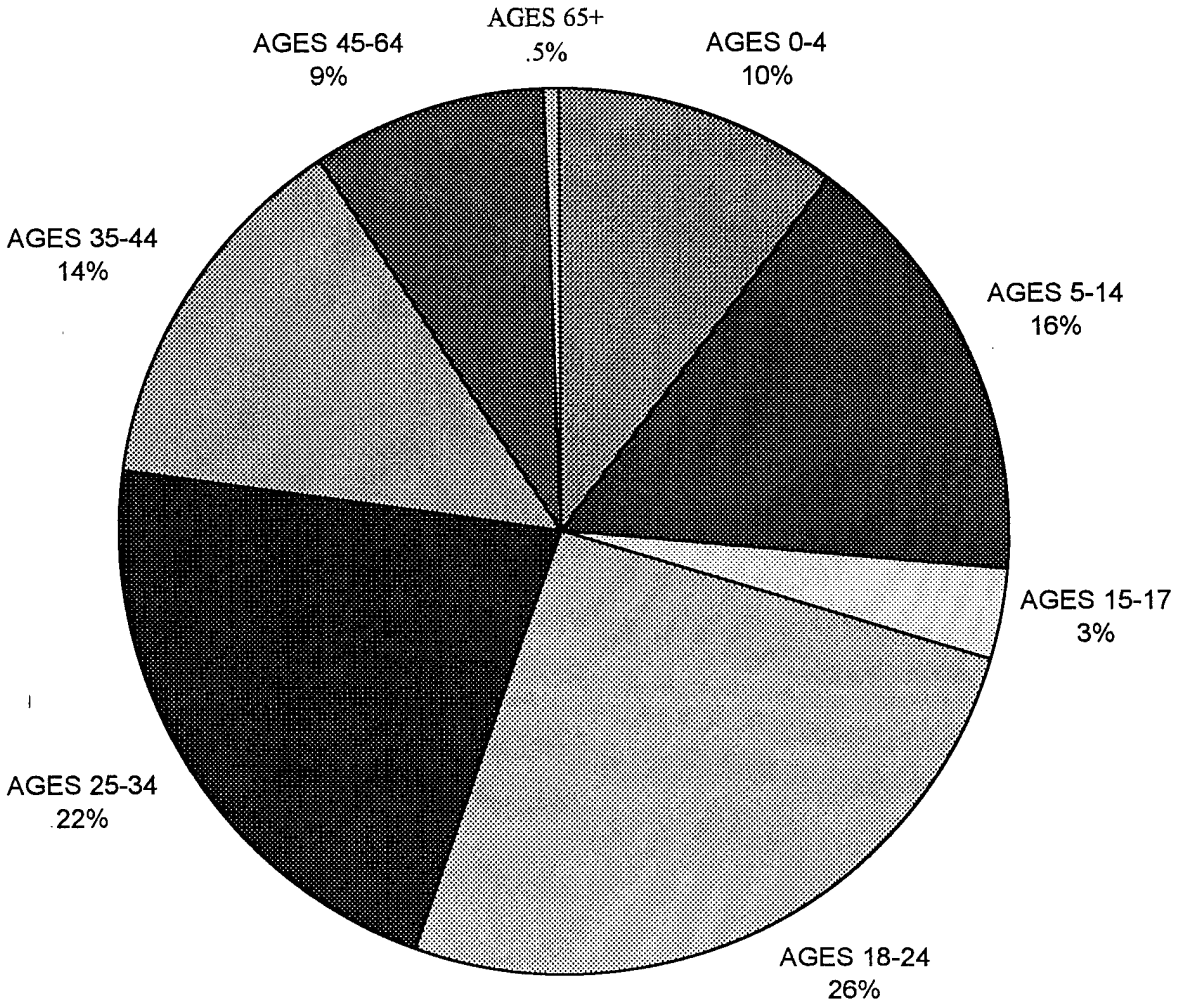


1994 Region Nine Beneficiary Population (Black)

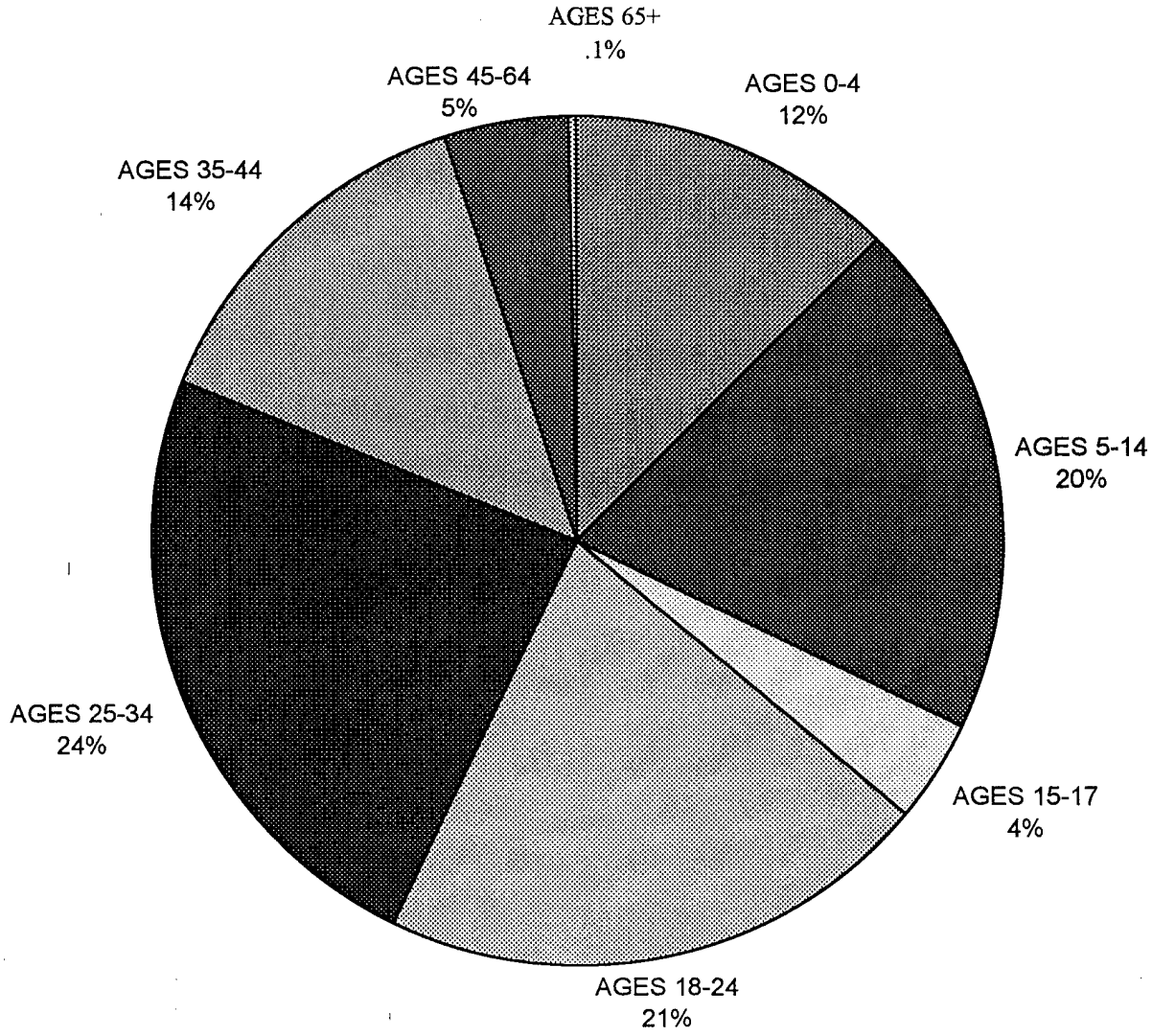


DEERS [1995]		HEALTH SERVICE REGION: 09								
WHITE										
AGE GROUP N	GENDER	AD	AD FAMILY	GUARD/RESERVE	GUARD/RES FAMILY	RETIRED	RETIRED FAMILY	SURVIVOR	OTHER	TOTAL
AGES 0-4	FEMALE	0	13869	0	333	0	521	25	61	14809
AGES 5-14	FEMALE	0	18753	0	763	0	3697	112	76	23401
AGES 15-17	FEMALE	4	2829	1	153	0	2020	39	5	5051
AGES 18-24	FEMALE	3566	16041	115	283	14	3058	81	43	23201
AGES 25-34	FEMALE	2804	24068	126	588	65	954	79	116	28800
AGES 35-44	FEMALE	1219	11763	99	501	304	5048	112	31	19077
AGES 45-64	FEMALE	148	2757	27	184	259	8002	154	20	11551
AGES 65+	FEMALE	0	157	0	2	18	407	19	0	603
AGES 0-4	MALE	0	14722	0	330	0	537	22	65	15676
AGES 5-14	MALE	0	19048	0	750	0	3837	123	79	23837
AGES 15-17	MALE	50	2647	7	162	0	1994	22	2	4884
AGES 18-24	MALE	46156	2174	458	141	80	3022	43	48	52122
AGES 25-34	MALE	32795	898	677	33	528	46	0	166	35143
AGES 35-44	MALE	15249	441	577	39	4864	60	2	26	21258
AGES 45-64	MALE	2056	251	229	20	11050	72	1	45	13724
AGES 65+	MALE	3	44	0	1	750	15	0	0	813
									Total	293950
BLACK										
AGE GROUP N	GENDER	AD	AD FAMILY	GUARD/RESERVE	GUARD/RES FAMILY	RETIRED	RETIRED FAMILY	SURVIVOR	OTHER	TOTAL
AGES 0-4	FEMALE	0	3858	0	85	0	167	7	19	4136
AGES 5-14	FEMALE	0	5687	0	169	0	855	39	21	6771
AGES 15-17	FEMALE	0	831	0	29	0	447	7	4	1318
AGES 18-24	FEMALE	1253	3170	29	46	4	543	14	7	5066
AGES 25-34	FEMALE	1129	5947	63	132	36	241	33	46	7627
AGES 35-44	FEMALE	394	2553	43	81	107	1052	20	12	4262
AGES 45-64	FEMALE	32	402	8	12	28	1003	24	4	1513
AGES 65+	FEMALE	0	30	0	3	0	26	1	0	60
AGES 0-4	MALE	0	4068	0	95	0	157	6	24	4350
AGES 5-14	MALE	0	5706	0	192	0	860	37	21	6816
AGES 15-17	MALE	13	749	0	32	0	447	7	2	1250
AGES 18-24	MALE	8160	614	67	36	21	500	6	12	9416
AGES 25-34	MALE	7955	324	142	11	160	19	1	52	8664
AGES 35-44	MALE	3557	168	104	9	1253	19	1	7	5118
AGES 45-64	MALE	225	26	35	7	1556	8	1	6	1864
AGES 65+	MALE	0	7	0	0	27	4	0	0	38
									Total	68269

1995 Region Nine Beneficiary Population (White)



1995 Region Nine Beneficiary Population (Black)



Appendix B

Direct Care FY 93 TRICARE Region Nine			
Data retrieved from Retrospective Case Mix Analysis System (RCMAS)			
CAUCASOID (WHITE)			
Rank	ICD-9-CM Code	Description	Total Records
1	664	PERINEAL TRAUMA W DELIVERY	876
2	550	INGUINAL HERNIA	778
3	303	ALCOHOL DEPENDENCE SYNDROME	688
4	717	INTERNAL DERANGEMENT KNEE	657
5	474	CHRONIC TONSILS AND ADENOIDS	644
6	786	RESPIRATORY SYS/OTH CHEST SYMPTOMS	571
7	650	NORMAL DELIVERY	512
8	366	CATARACT	502
9	381	OTITIS MEDIA AND EUST. TUBE DISORDERS	475
10	656	OTHER FETAL PROBLEM AFFECTING MOTHER	463
11	574	CHOLELITHIASIS	414
12	470	KERATITIS	398
13	414	OTH FORMS OF CHRONIC ISCHEMIC HEART DISEAS	376
14	644	EARLY THREATENED LABOR	371
15	493	ASTHMA	360
16	486	PNEUMONIA ORG UNSPEC	349
17	682	OTH CELLULITIS AND ABSCESS	340
18	727	OTH DIS OF SYNOVIUM/TENDON/BURSA	340
19	661	ABNORMALITY OF FORCES OF LABOR	335
20	427	CARDIAC DYSRHYTHMIAS	333
21	540	ACUTE APPENDICITIS	331
22	718	OTH DERANGEMENT OF JOINT	323
23	780	GENERAL SYMPTOMS	297
24	663	UMBILICAL CORD COMPLICATIONS	290
25	309	ADJUSTMENT REACTION	274
26	669	OTH COMP OF LABOR AND DELIVERY	272
27	648	OTH CURRENT COND IN PREGNANCY	266
28	625	DYSMENORRHEA	254
29	382	SUPPURATIVE AND UNSPEC OTITIS MEDIA	240
30	789	OTH SYM OF ABDOMEN AND PELVIS	228
31	524	ANOMALIES OF DENTAL ARCH RELATIONSHIP	222
32	553	OTH HERNIA OF ABDOMINAL CAVITY	220
33	658	OTH PROB W AMNIOTIC CAVITY AND MEMBRANE	220
34	558	OTH NONINF GASTROENTERITIS AND COLITIS	218
35	652	MALPOSITION AND MALPRES OF FETUS	218
36	634	SPONTANEOUS ABORTION	209
37	632	MISSED ABORTION	207
38	530	DISEASES OF ESOPHAGUS	206
39	473	CHRONIC SINUSITIS	204
40	722	INTEVERTEGRAL DISC DISORDERS	204
41	996	COMPLICATIONS TO CERTAIN SPED PROCEDURE	197
42	590	INFECTIONS OF KIDNEY	188
43	738	FLAT FOOT	188
44	726	PERIPHERAL ENTHESOPATHIES AND ALLIED SYM	187
45	411	OTH ACUTE/SUBACUTE FORM OF ISCHEMIC HEA	186
46	715	OSTEOARTHROSIS AND ALLIED DISORDERS	185
47	374	OTH DISORDERS OF EYELIDS	182
48	733	OSTEOPOROSIS, UNSPECIFIED	175
49	482	OTH BACTERIAL PNEUMONIA	172
50	998	OTH COMPLICATIONS OF PROCEDURES	168
53	250	DIABETES MELLITUS	154
74	218	UTERINE LEIOMYOMA	115

Direct Care FY 94 TRICARE Region Nine			
Data retrieved from Retrospective Case Mix Analysis System (RCMAS)			
CAUCASOID (WHITE)			
Rank	ICD-9-CM Code	Description	Total Records
1	664	PERINEAL TRAUMA W DELIVERY	959
2	550	INGUINAL HERNIA	665
3	717	INTERNAL DERANGEMENT KNEE	656
4	786	RESPIRATORY SYS/OTH CHEST SYMPTOMS	520
5	486	PNEUMONIA ORGANISM UNSPECIFIED	463
6	366	CATARACT	430
7	474	CHRONIC TONSILS AND ADENOIDS	415
8	381	OTITIS MEDIA AND EUSTACHIAN TUBE DISORDERS	412
9	303	ALCOHOL DEPENDENCE SYNDROME	411
10	650	NORMAL DELIVERY	401
11	656	OTHER FETAL PROBLEM AFFECTING MOTHER	393
12	309	ADJUSTMENT REACTION	379
13	414	OTH FORMS OF CHRONIC ISCHEMIC HEART DISEAS	376
14	574	CHOLELITHIASIS	364
15	493	ASTHMA	362
16	644	EARLY THREATENED LABOR	321
17	682	OTHER CELLULITIS AND ABSCESS	315
18	427	CARDIAC DYSRHYTHMIAS	314
19	661	ABNORMALITY OF FORCES OF LABOR	308
20	780	GENERAL SYMPTOMS	300
21	540	ACUTE APPENDICITIS	287
22	470	DEFLECTED NASAL SEPTUM	277
23	648	OTH CURRENT COND IN PREGNANCY	269
24	663	UMBILICAL CORD COMPLICATIONS	261
25	718	OTH DERANGEMENT OF JOINT	255
26	996	COMPLICATIONS TO CERTAIN SPEC PROCEDURES	234
27	722	INTEVERTEBRAL DISC DISORDERS	229
28	727	OTH DIS SYNOV/TEND/BURSA	224
29	658	OTH PROB W AMNIOTIC CAVITY AND MEMBRANE	216
30	634	SPONTANEOUS ABORTION	208
31	558	OTH NONINF GASTROENTERITIS AND COLITIS	207
32	530	DISEASES OF ESOPHAGUS	205
33	654	ABN PELVIC ORGAN IN PREG	204
34	789	OTH SYM OF ABDOMEN AND PELVIS	204
35	276	ACIDOSIS	201
36	625	DYSMENORRHEA	201
37	553	OTH HERNIA OF ABDOMINAL CAVITY	198
38	715	OSTEOARTHROSIS AND ALLIED DISORDERS	194
39	374	OTH DISORDERS OF EYELID	183
40	738	FLAT FOOT	179
41	296	AFFECTIVE PSYCHOSES	177
42	590	INFECTIONS OF KIDNEY	175
43	652	MALPOSITION AND MALPRESENTATION OF FETUS	171
44	428	HEART FAILURE	170
45	733	OTH DISORDERS OF BONE AND CARTILAGE	170
46	642	MYPERTENSION COMPLICATIING PREGNANCY	164
47	473	CHRONIC SINUSITIS	157
48	524	DENTOFACIAL ANOMALIES	155
49	466	ACUTE BRONCHITIS AND BRONCHIOLITIS	154
50	998	OTH COMP OF PROCEDURES	149
55	250	DIABETES MELLITUS	127
88	218	UTERINE LEIOMYOMA	80

Direct Care FY 95 TRICARE Region Nine			
Data retrieved from Retrospective Case Mix Analysis System (RCMAS)			
CAUCASOID (WHITE)			
Rank	ICD-9-CM Code	Description	Total Records
1	664	PERINEAL TRAUMA W DELIVERY	792
2	717	INTERNAL DERANGEMENT KNEE	505
3	550	INGUINAL HERNIA	462
4	486	PNEUMONIA ORGANISM UNSPECIFIED	441
5	303	ALCOHOL DEPENDENCE SYNDROME	432
6	414	OTH FORMS OF CHRONIC ISCHEMIC HEART DISEAS	356
7	786	RESPIRATORY SYS/OTH CHEST SYMPTOMS	343
8	650	NORMAL DELIVERY	333
9	366	CATARACT	317
10	474	CHRONIC TONSILS AND ADENOIDS	304
11	644	EARLY THREATENED LABOR	290
12	661	ABNORMAL FORCES OF LABOR	279
13	718	OTHER JOINT DERANGEMENT	266
14	574	CHOLELITHIASIS	258
15	382	SUPPURATIVE AND UNSPECIFIED OTITIS MEDIA	250
16	656	OTH FETAL AND PLACENTAL PROB	236
17	663	UMBILICAL CORD COMPLICATIONS	236
18	727	OTH DIS OF SYNOVIUM, TENDON, AND BURSA	236
19	220	BENIGN NEOPLASM OF OVARY	233
20	648	OTH CURRENT COND IN PREGNANCY	232
21	682	OTHER CELLULITIS AND ABSCESS	232
22	309	ADJUSTMENT REACTION	231
23	427	CARDIAC DYSRHYTHMIAS	213
24	540	ACUTE APPENDICITIS	201
25	470	DEFLECTED NASAL SEPTUM	200
26	493	ASTHMA	200
27	780	GENERAL SYMPTOMS	195
28	381	NONSUPPURATIVE OTITIS MEDIA AND EUS TUBE DI	179
29	715	OSTEOARTHROSIS AND ALLIED DISORDERS	173
30	789	OTH SYM INVOLVING ABDOMEN AND PELVIS	169
31	654	ABNORMALITY OF ORGANS OF PELVIS	162
32	996	COMPLICATIONS PECULIAR TO CERTAIN PROC	161
33	553	OTH HERNIA OF ABDOMINAL CAVITY	153
34	998	OTH COMPLICATIONS OF PROCEDURES	149
35	296	AFFECTIVE PSYCHOSES	145
36	590	INFECTIONS OF KIDNEY	144
37	558	OTH NONINF GASTROENTERITIS AND COLITIS	143
38	625	FEMALE GENITAL SYMPTOMS	141
39	733	OTH DISORDERS OF BONE AND CARTILAGE	136
40	530	DISEASES OF ESOPHAGUS	135
41	634	SPONTANEOUS ABORTION	133
42	652	MALPOSITION AND MALPRESENTATION OF FETUS	130
43	008	INTESTINAL INFECTION DUE TO OTHER ORGANISM,	129
44	726	PERIPHERAL ENTHESOPATHIES AND ALLIED SYM	125
45	722	INTVERTEBRAL DISC DISORDERS	123
46	642	HYPERTENSION COMPLICATING PREGNANCY	119
47	632	MISSED ABORTION	117
48	466	ACUTE BRONCHITIS AND BRONCHIOLITIS	114
49	301	PERSONALITY DISORDERS	113
50	374	OTH DISORERS OF EYE	113
60	250	DIABETES MELLITUS	95
75	218	UTERINE LEIOMYOMA	73

Direct Care FY 93 TRICARE Region Nine			
Data retrieved from Retrospective Case Mix Analysis System (RCMAS)			
NEGROID (BLACK)			
Rank	ICD-9-CM Code	Description	Total Records
1	664	PERINEAL TRAUMA W DELIVERY	143
2	493	ASTHMA	139
3	644	EARLY THREATENED LABOR	134
4	474	CHRONIC TONSILS AND ADENOIDS	133
5	717	INTERNAL DERANGEMENT KNEE	130
6	550	INGUINAL HERNIA	126
7	656	OTHER FETAL PROBLEM AFFECTING MOTHER	120
8	727	OTH DIS SYNOV/TEND/BURSA	114
9	650	NORMAL DELIVERY	105
10	786	RESPIRATORY SYS/OTH CHEST SYMPTOMS	104
11	303	ALCOHOL DEPENDENCE SYNDROME	95
12	661	ABNORMAL FORCES OF LABOR	82
13	486	PNEUMONIA ORGANISM UNSPECIFIED	72
14	658	OTH AMNIOTIC CAVITY PROBLEM	65
15	780	GENERAL SYMPTOMS	60
16	605	REDUNDANT PREPUCE AND PHIMOSIS	58
17	634	SPONTANEOUS ABORTION	58
18	654	ABNORMALITY OF OGRANS/SOFT TISS OF PELVIS	57
19	718	OTH DERANGEMENT OF KNEE	55
20	309	ADJUSTMENT REACTION	54
21	648	OTH COMPLICATIONS OF PREGNANCY	54
22	218	UTERINE LEIOMYOMA	53
23	553	OTH HERNIA OF ABDOMINAL CAVITY	50
24	250	DIABETES MELLITUS	47
25	663	UMBILICAL CORD COMPLICATIONS	47
26	529	DISEASES AND OTH CONDITIONS OF TONGUE	44
27	574	CHOLELITHIASIS	43
28	735	ACQUIRED DEFORMITIES OF TOE	43
29	642	HYPERTENSION COMP PREGNANCY	42
30	381	NONSUPPURATIVE OTITIS MEDIA & EUS TUBE DIS	39
31	520	DISORDERS OF TOOTH DEV AND ERUPTION	38
32	625	DYSMENORRHEA	37
33	614	FEMALE PELVIC INF DIS	36
34	633	ECTOPIC PREGNANCY	36
35	540	ACUTE APPENDICTIS	34
36	079	OTHER SPECIFIED VIRAL AND CHLAMYDIAL INFE	33
37	524	DENTOFACIAL ANOMALIES	33
38	626	DISORDERS OF MENSTRUATION	33
39	789	OTH SYM INVOL ABDOMEN AND PELVIS	33
40	652	MALPOSITION AND MALPRES OF FETUS	32
41	669	OTH COMP OF LABOR AND DELIVERY	32
42	682	OTH CELLULITIS AND ABSCESS	32
43	998	OTH COMP OF PROCEDURES	32
44	276	ACIDOSIS	31
45	733	OTH DISORDERS OF BONE AND CARTILAGE	31
46	482	OTH BACTERIAL PNEUMONIA	30
47	558	OTH NONINF GASTROENTERITIS AND COLITIS	30
48	726	PERIPHERAL ENTHESOPATHIES	30
49	470	DEFLECTED NASAL SEPTUM	29
50	996	COMPLICATIONS PECULIAR TO CERTAIN PROC	29
60	414	OTH FORMS OF CHRONIC ISCHEMIC HEART DIS	23
63	366	CATARACTS	21
79	530	DISEASES OF ESOPHAGUS	17
93	427	CARDIAC DYSRHYTHMIAS	15

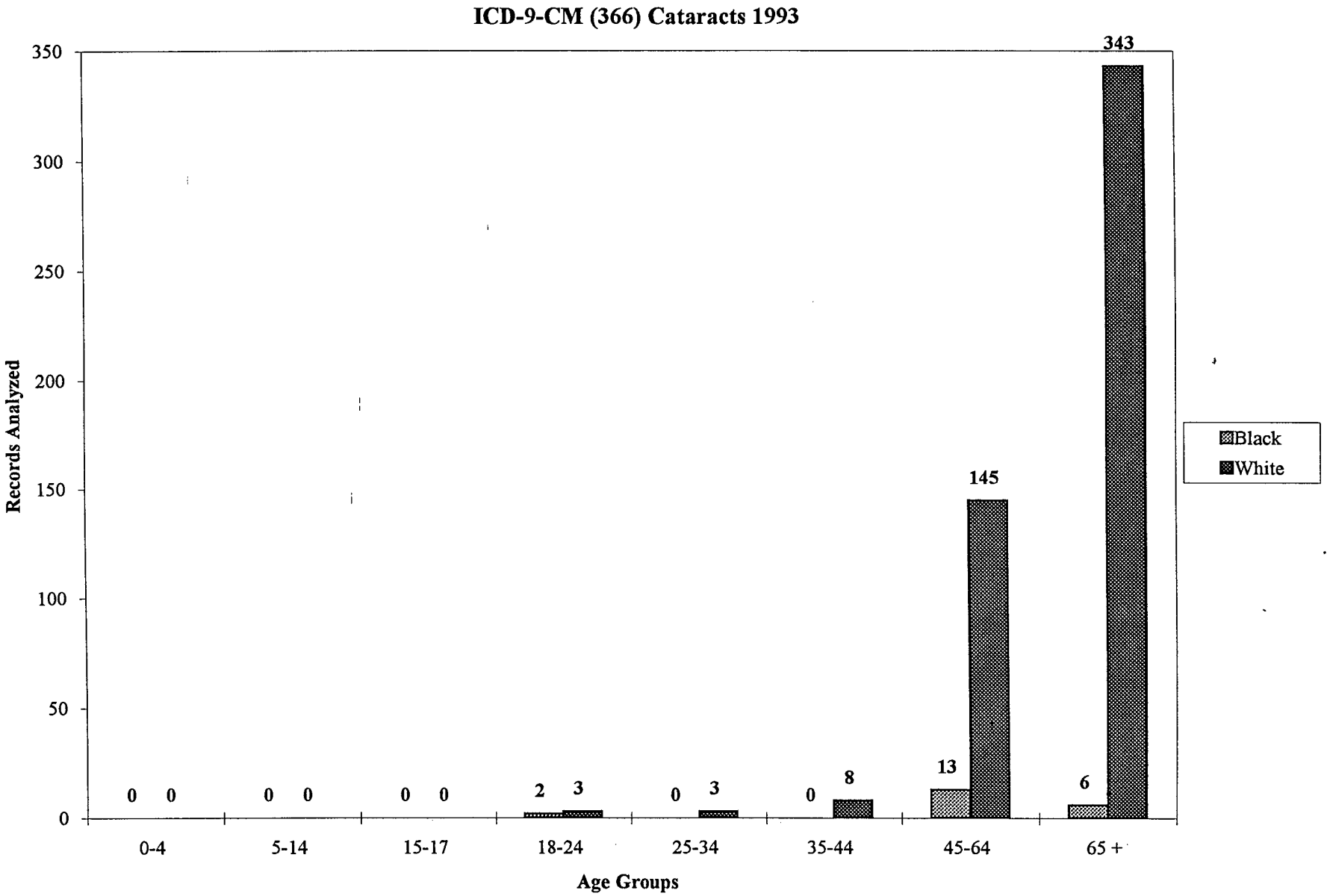
Appendix B

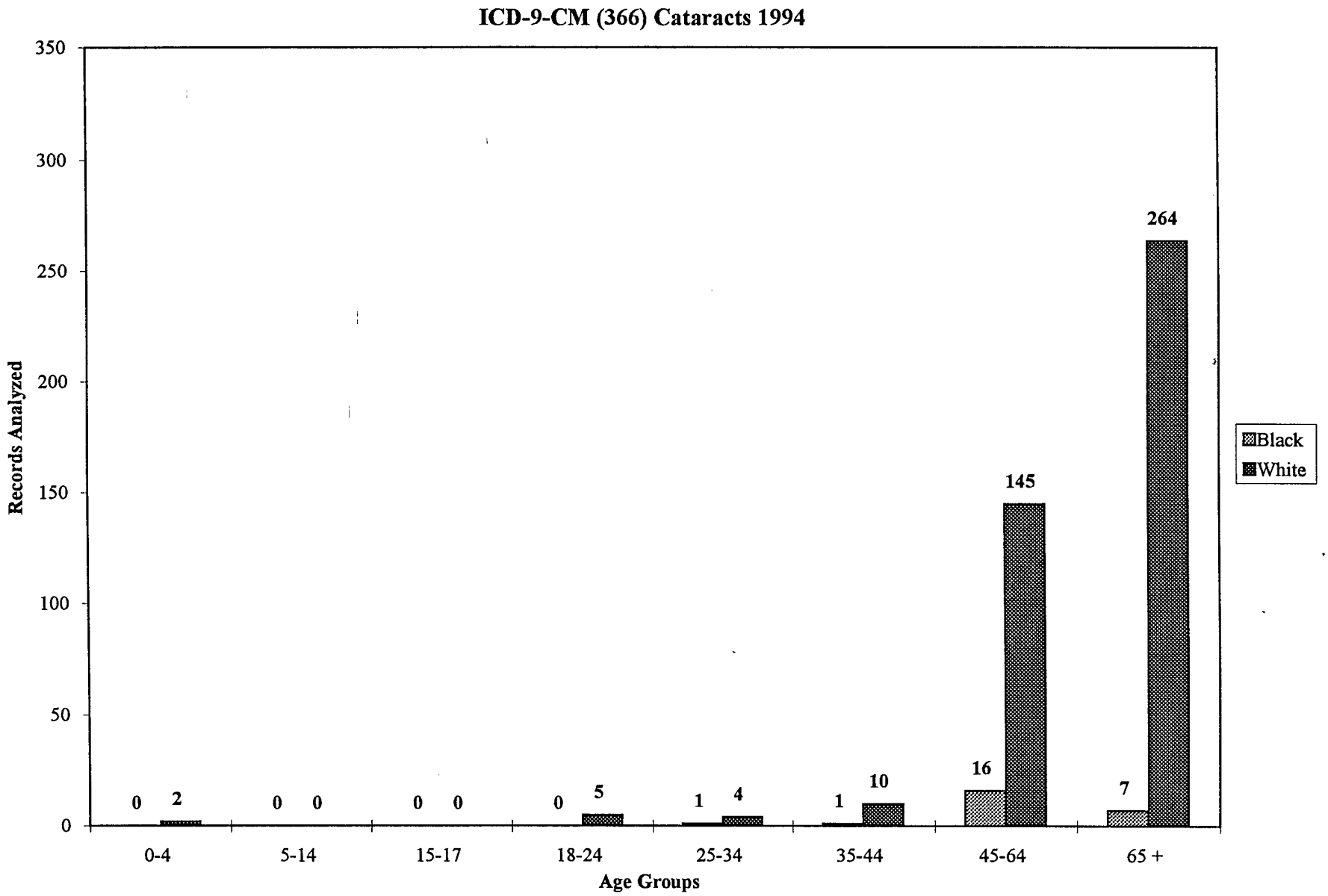
Direct Care FY 94 TRICARE Region Nine			
Data retrieved from Retrospective Case Mix Analysis System (RCMAS)			
NEGROID (BLACK)			
Rank	ICD-9-CM Code	Description	Total Records
1	493	ASTHMA	149
2	717	INTERNAL DERANGEMENT KNEE	142
3	550	INGUINAL HERNIA	100
4	786	RESPIRATORY SYS/OTH CHEST SYMPTOMS	95
5	486	PNEUMONIA ORGANISM UNSPECIFIED	86
6	474	CHRONIC TONSILS AND ADENOIDS	76
7	727	OTH DIS SYNOV/TEND/BURSA	61
8	718	OTHER JOINT DERANGEMENT	51
9	381	NONSUPPURATIVE OTITIS MEDIA AND EUSTACHIAN TUBE DISORDERS	45
10	682	OTHER CELLULITIS AND ABCESS	42
11	250	DIABETES MELLITUS	41
12	780	GENERAL SYMPTOMS	39
13	540	ACUTE APPENDICITIS	33
14	558	OTH NONINF GASTROENTERITIS	33
15	789	OTH ABDOMEN/PELVIS SYMPTOMS	32
16	414	OTH FORMS CHRONIC ISCHEMIC HEART DIS	29
17	466	ACUTE BRONCHITIS AND BRONCHIOLITIS	29
18	553	OTH HERNIA OF ABDOMINAL CAVITY	29
19	577	DISEASE OF PANCREAS	29
20	733	OTH DISORDERS OF BONE AND CARTILAGE	29
21	428	HEART FAILURE	26
22	735	ACQUIRED DEFORMITIES OF TOE	25
23	366	CATARACT	24
24	726	PERIPHERAL ENTHESOPATHIES AND ALLIED SYS	24
25	722	INTERVERTEBRAL DISC DISORDERS	23
26	996	COMPLICATIONS PERCULIAR TO CERTAIN PROC	23
27	427	CARDIAC DYSRHYTHMIAS	22
28	524	DENTOFACIAL ANOMALIES	22
29	530	DISEASES OF ESOPHAGUS	22
30	845	SPRAINS AND STRAINS OF ANKLE AND FOOT	22
31	824	FRACTURE OF ANKLE	21
32	410	ACUTE MYOCARDIAL INFARACTION	20
33	611	OTH DISORDERS OF BREAST	20
34	715	OSTEOARTHROSIS AND ALLIED DISORDERS	20
35	473	CHRONIC SINUSITIS	19
36	560	INTESTINAL OBST WO HERNIA	15
37	520	DISORDERS OF TOOTH DEVELOPMENT AND ERUP	14
38	844	SPRAINS/STRAINS OF KNEE AND LEG	14
39	008	INTESTINAL INFECTION DUE TO OTHER ORGANISM	13
40	518	OTH DISEASES OF LUNG	13
41	574	CHOLELITHIASIS	13
42	802	FRACTURE OF FACE BONES	13
43	174	MALIGNANT NEOPLASM OF FEMALE BREAST	12
44	214	LIPOMA	12
45	365	GLAUCOMA	12
46	378	UNSPECIFIED DISORDER OF EYE MOVEMENTS	12
47	401	ESSENTIAL HYPERTENSION	12
48	470	DEFLECTED NASAL SEPTUM	12
49	569	OTH DISORDERS OF INTESTINE	12
50	685	PILONIDAL CYST	12

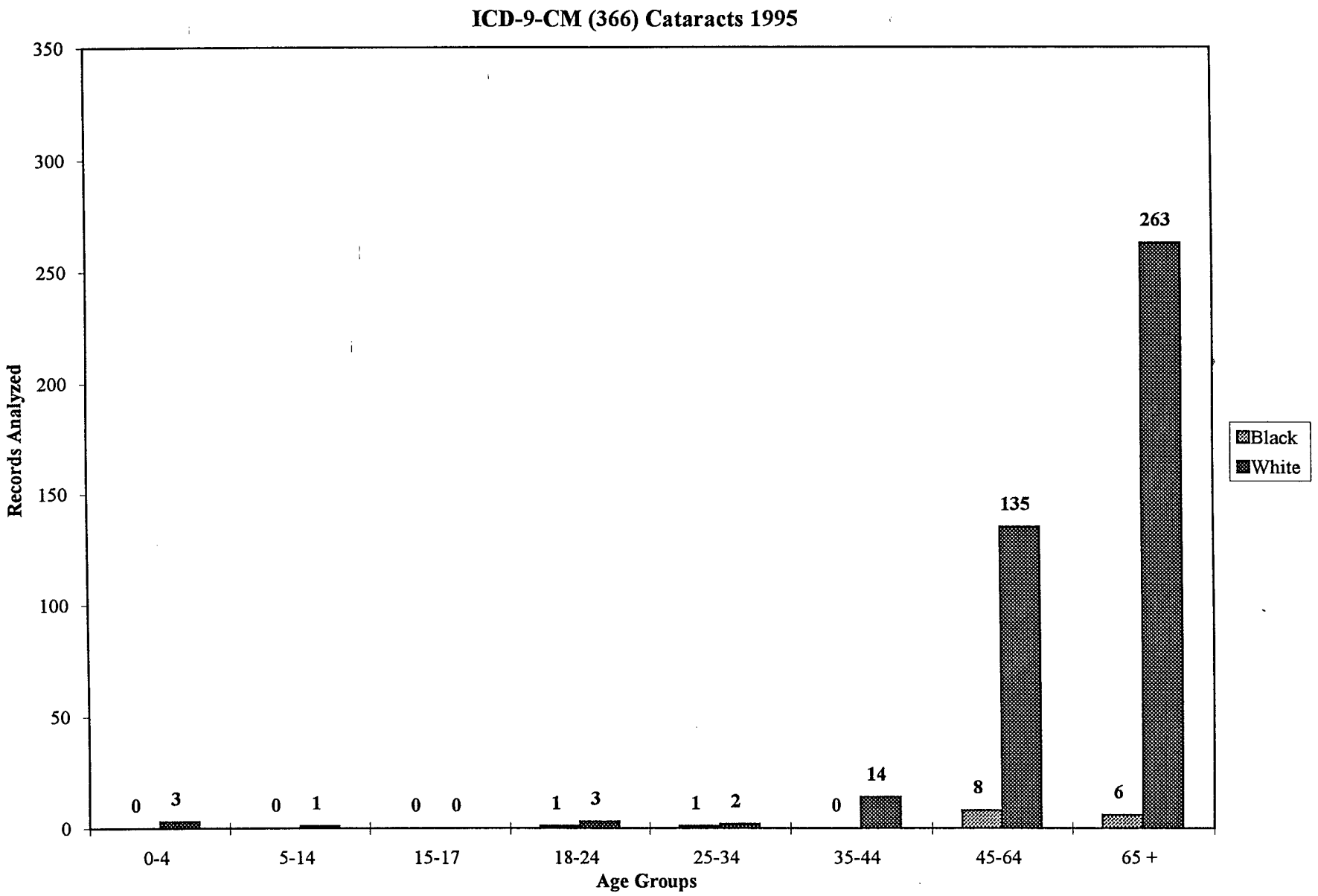
Direct Care FY 95 TRICARE Region Nine			
Data retrieved from Retrospective Case Mix Analysis System (RCMAS)			
NEGROID (BLACK)			
Rank	ICD-9-CM Code	Description	Total Records
1	664	PERINEAL TRAUMA W DELIVERY	127
2	717	INTERNAL DERANGEMENT KNEE	108
3	493	ASTHMA	105
4	474	CHRONIC TONSILS AND ADENOIDS	74
5	486	PNEUMONIA ORGANISM UNSPECIFIED	73
6	309	ADJUSTMENT REACTION	66
7	550	INGUINAL HERNIA	66
8	650	NORMAL DELIVERY	65
9	644	EARLY THREATENED LABOR	63
10	786	RESPIRATORY SYS/OTH CHEST SYMPTOMS	62
11	656	OTHER FETAL PROBLEM AFFECTING MOTHER	61
12	605	REDUN PREPUCE & PHIMOSIS	56
13	661	ABNORMAL FORCES OF LABOR	54
14	727	OTH DIS SYNOV/TEND/BURSA	52
15	780	GENERAL SYMPTOMS	52
16	648	OTH CURRENT COND IN PREG	51
17	303	ALCOHOL DEPENDENCE SYNDROME	47
18	218	UTERINE LEIOMYOMA	45
19	654	ABN PELVIC ORGAN IN PREG	43
20	282	HEREDITARY HEMOLYTIC ANEMIAS	38
21	553	OTH HERNIA OF ABDOMINAL CAVITY	37
22	718	OTH DERANGEMENT OF JOINT	36
23	663	UMBILICAL CORD COMPLICATIONS	34
24	996	COMPLICATIONS TO CERTAIN SPEC PROCEDURES	33
25	614	FEMALE PELVIC INFLAM DIS	29
26	634	SPONTANEOUS ABORTION	29
27	682	OTH CELLULITIS AND ABSCESS	28
28	633	ECTOPIC PREGNANCE	27
29	382	SUPPURATIVE AND UNSPEC OTITIS MEDIA	25
30	466	ACUTE BRONCHITIS AND BRONCHIOLITIS	25
31	590	INFECTIONS OF KIDNEY	25
32	642	HYPERTENSION COMP PREGNANCY	25
33	719	OTH & UNSPECIFIED JOINT DISORDER	24
34	733	OTH DISORDERS OF BONE AND CARTILAGE	24
35	789	OTH SYM OF ABDOMEN AND PELVIS	24
36	558	OTH NONINF GASTROENTERITIS AND COLITIS	23
37	574	CHOLELITHIASIS	23
38	381	NONSUPPURATIVE OTITIS MEDIA & EUS TUBE DISO	22
39	529	DISEASES AND OTH COND OF TONGUE	22
40	540	ACUTE APPENDICITIS	21
41	611	OTH DISORDERS OF BREAST	21
42	652	MALPOSITION AND MALPRES OF FETUS	21
43	726	PERIPHERAL ENTHESOPATHIES AND OTH SYS	21
44	304	DRUG DEPENDENCE	20
45	530	DISEASES OF ESOPHAGUS	20
46	658	OTH PROB W AMNIOTIC CAVITY AND MEMBRANES	20
47	660	OBSTRUCTED LABOR	20
48	665	OTH OBSTETRICAL TRAUMA	20
49	715	OSTEOARTHROSIS AND ALLIED DISORDERS	20
50	250	DIABETES MELLITUS	19
66	414	OTH FORMS OF CHRONIC ISCHEMIC HEART DISE	13
67	427	CARDIAC DYSRHYTHMIAS	13
78	366	CATARACT	11

Appendix C
ICD-9-CM (366) Cataracts
Age Group Dispersion

	1993	1994	1995			1993	1994	1995
	Black	Black	Black			White	White	White
0-4	0	0	0		0-4	0	2	3
5-14	0	0	0		5-14	0	0	1
15-17	0	0	0		15-17	0	0	0
18-24	2	0	1		18-24	3	5	3
25-34	0	1	1		25-34	3	4	2
35-44	0	1	0		35-44	8	10	14
45-64	13	16	8		45-64	145	145	135
65 +	6	7	6		65 +	343	264	263
	21	25	16			502	430	421
Gender					Gender			
Male	12	18	9		Male	285	226	221
Female	9	7	7		Female	217	204	200


ICD-9-CM (366) Cataracts 1993
Records Analyzed
350
300
250
200
150
100
50
0
0 0
0 0
0 0
2 3
0 3
0 8
13 145
6 343
0-4
5-14
15-17
18-24
25-34
35-44
45-64
65 +
Age Groups
Black
White


ICD-9-CM (366) Cataracts 1994
350
300
250
200
150
100
50
0
Records Analyzed
0
2
0
0
0
0
0
5
1
4
1
10
16
145
7
264
0-4
5-14
15-17
18-24
25-34
35-44
45-64
65 +
Age Groups
Black
White


ICD-9-CM (366) Cataracts 1995
Records Analyzed
350
300
250
200
150
100
50
0
0 3
0 1
0 0
1 3
1 2
0 14
8 135
6 263
0-4
5-14
15-17
18-24
25-34
35-44
45-64
65 +
Age Groups
Black
White

Appendix C
CHI Square Calculation
ICD-9-CM 366 Cataracts

Principle Diagnosis 366 Cataracts-1993									
		w/disease	wo/disease						
	Black	21	72127	72148					
	White	502	310597	311099					
		523	382724	383247					
	(expected	98.46	72049.54						
		424.54	310674.46						
		O	E	O-E	(O-E)^2	(O-E)^2/E			
		21	98.46	-77.46	6000.052	60.93898			
		502	424.54	77.46	6000.052	14.13307			
		72127	72049.54	77.46	6000.052	0.083277			
		310597	310674.5	-77.46	6000.052	0.019313			
					x(2)	75.17463			
Principle Diagnosis 366 Cataracts-1994									
		w/disease	wo/disease						
	Black	25	69006	69031					
	White	430	298110	298540					
		455	367116	367571					
	(expected	85.45	68945.55						
		369.55	298170.45						
		O	E	O-E	(O-E)^2	(O-E)^2/E			
		25	85.66	-60.66	3679.636	42.95629			
		430	369.34	60.66	3679.636	9.962732			
		72123	72062.34	60.66	3679.636	0.051062			
		310669	310729.7	-60.66	3679.636	0.011842			
					x(2)	52.98192			
Principle Diagnosis 366 Cataracts-1995									
		w/disease	wo/disease						
	Black	16	68253	68269					
	White	421	293529	293950					
		437	361782	362219					
	(expected	82.36	68186.64						
		354.64	293595.36						
		O	E	O-E	(O-E)^2	(O-E)^2/E			
		16	82.36	-66.36	4403.65	53.46831			
		421	354.64	66.36	4403.65	12.41724			
		68253	68186.64	66.36	4403.65	0.064582			
		293529	293595.4	-66.36	4403.65	0.014999			
					x(2)	65.96513			

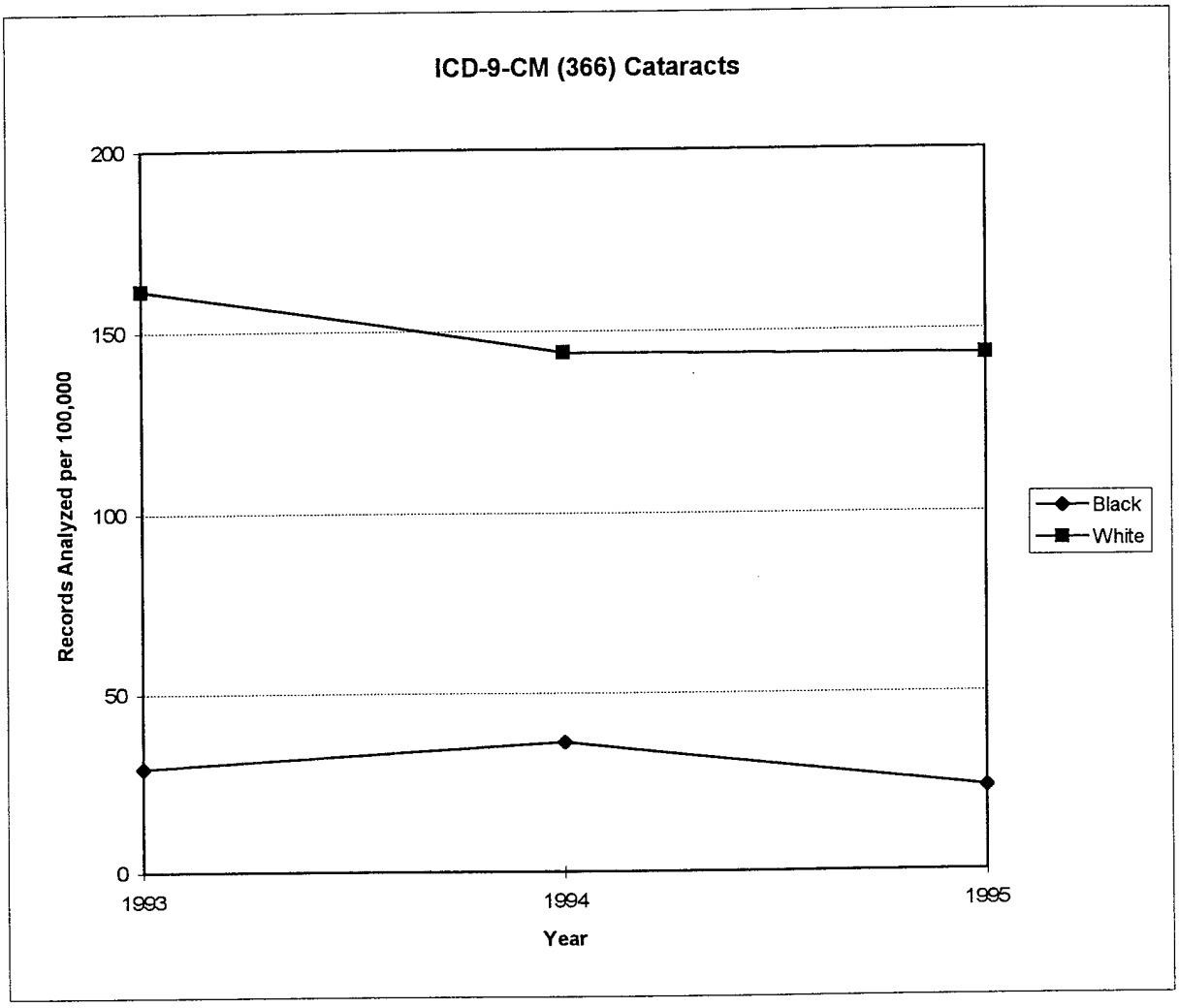
Appendix C
Confidence Interval Calculation
ICD-9-CM 366 Cataracts.

1993								
	Black	21	sqrt	4.58	Black pop	72148		
	White	502	sqrt	22.4	White pop	311099		
Black					White			
1	21/72148x100000=		29.11		1	502/311099x100000=		161.36
2	4.58x1.96=		8.98		2	22.4x1.96=		43.90
3	21+8.98=		29.98		3	502+43.9=		545.90
4	21-8.98=		12.02		4	502-43.9=		458.10
5	100000/72148=		1.39		5	100000/311099=		0.32
CI					**CI**			
6	1.39x29.88=		41.55		6	.32x545.90=		175.48
7	1.39x12.02=		16.66		7	.32x458.10=		147.25
1994								
	Black	25	sqrt	5	Black pop	69031		
	White	430	sqrt	20.73	White pop	298540		
Black					White			
1	36.22				1	144.03		
2	9.80				2	40.63		
3	34.80				3	470.63		
4	15.20				4	389.37		
5	1.45				5	0.33		
CI					**CI**			
6	50.41				6	157.64		
7	22.02				7	130.42		
1995								
	Black	16	sqrt	4	Black pop	68269		
	White	421	sqrt	20.51	White pop	293950		
Black					White			
1	23.44				1	143.22		
2	7.84				2	40.20		
3	23.84				3	461.20		
4	8.16				4	380.80		
5	1.46				5	0.34		
CI					**CI**			
6	34.92				6	156.90		
7	11.95				7	129.55		

Appendix C
Odds Ratio Calculation
ICD-9-CM 366 Cataracts

Year	Race	Records	R/population	Rate	Odds Ratio
93	B	21	72148	0.0002911	
	W	502	311099	0.0016136	5.543832548
	BM	12	39684	0.0003024	
	WM	285	182397	0.0015625	5.167272488
	BF	9	31129	0.0002891	
	WF	217	128702	0.0016861	5.83172583
	BF	9	31129	0.0002891	
	BM	12	39684	0.0003024	1.045895911
	WF	217	128702	0.0016861	1.079064162
	WM	285	182397	0.0015625	
94	B	25	69031	0.0003622	
	W	430	298540	0.0014403	3.977132713
	BM	18	38144	0.0004719	
	WM	226	171500	0.0013178	2.79253126
	BF	7	30887	0.0002266	
	WF	204	127040	0.0016058	7.085448902
	BF	7	30887	0.0002266	
	BM	18	38144	0.0004719	2.082207275
	WF	204	127040	0.0016058	1.21855565
	WM	226	171500	0.0013178	
95	B	16	68269	0.0002344	
	W	421	293950	0.0014322	6.110998682
	BM	9	37516	0.0002399	
	WM	221	167457	0.0013197	5.50127031
	BF	7	30753	0.0002276	
	WF	200	126493	0.0015811	6.946290647
	BF	7	30753	0.0002276	
	BM	9	37516	0.0002399	1.053938891
	WF	200	126493	0.0015811	1.198048875
	WM	221	167457	0.0013197	

Appendix C



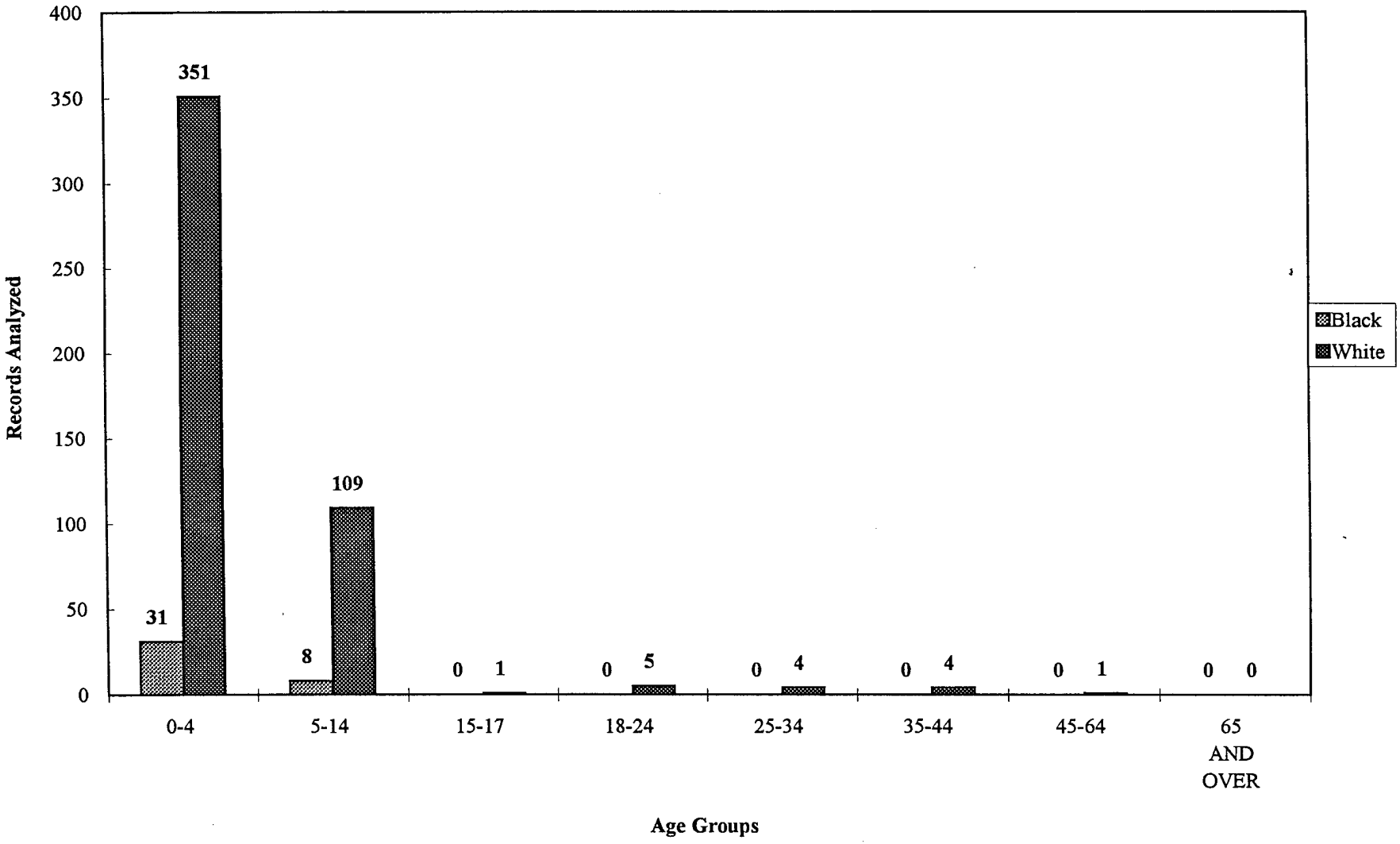
Records Analyzed per 100,000, confidence interval in parentheses

Race	1993	1994	1995
Black	29.11 (16.66, 41.55)	36.22 (22.02, 50.41)	23.44 (11.95, 34.92)
White	161.36 (147.25, 175.48)	144.03 (130.42, 157.64)	143.22 (129.55, 156.90)

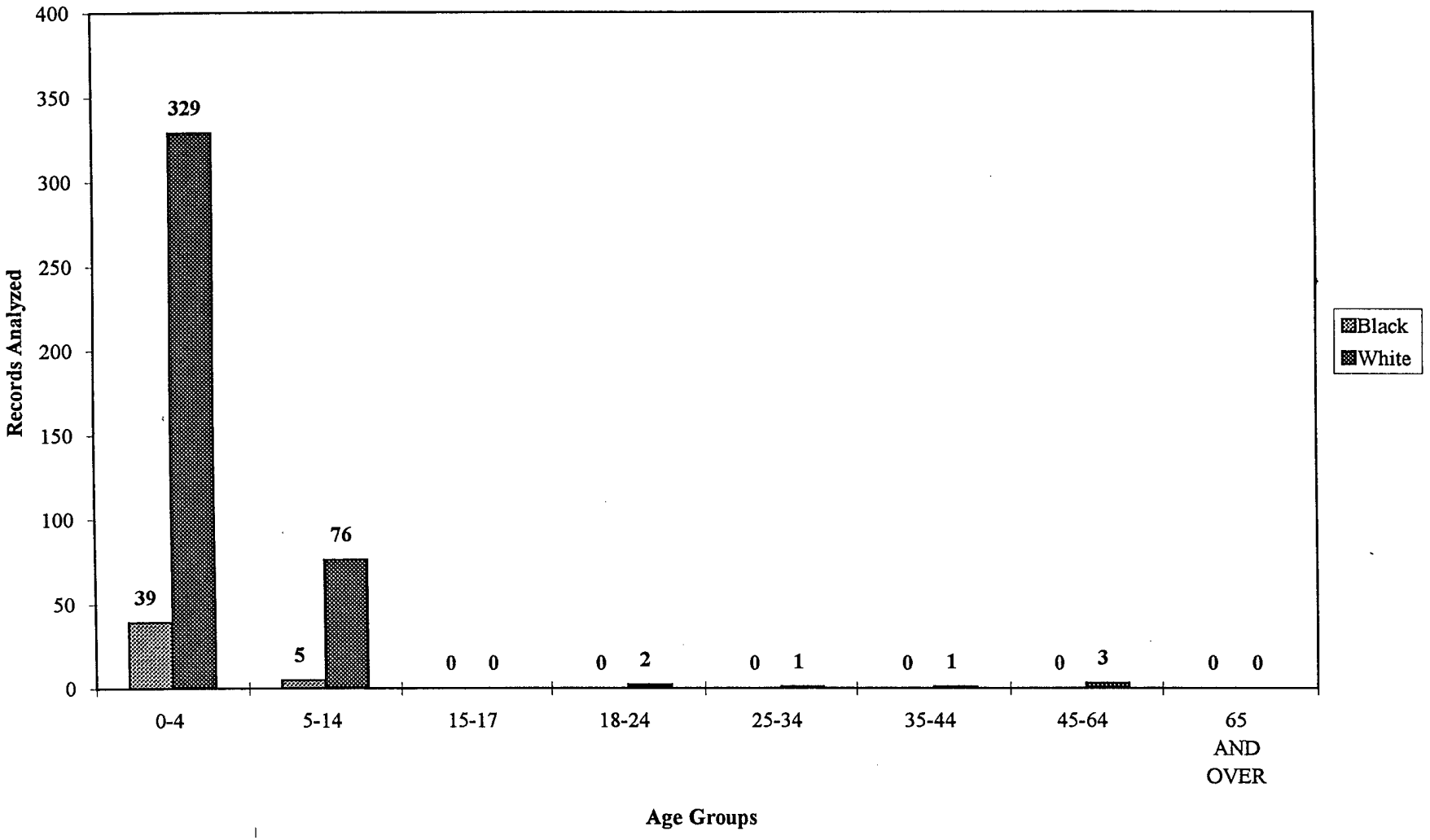
Appendix D
Age Group Dispersion
ICD-9-CM 381 Otitis Media

	1993	1994	1995			1993	1994	1995
	Black	Black	Black			White	White	White
0-4	31	39	17		0-4	351	329	130
5-14	8	5	4		5-14	109	76	50
15-17	0	0	0		15-17	1	0	1
18-24	0	0	0		18-24	5	2	4
25-34	0	0	0		25-34	4	1	1
35-44	0	0	0		35-44	4	1	5
45-64	0	0	0		45-64	1	3	0
65 AND O	0	0	0		65 AND O	0	0	0
	39	44	21			475	412	191
Gender					Gender			
Male	23	26	12		Male	286	259	108
Female	16	18	9		Female	189	153	77

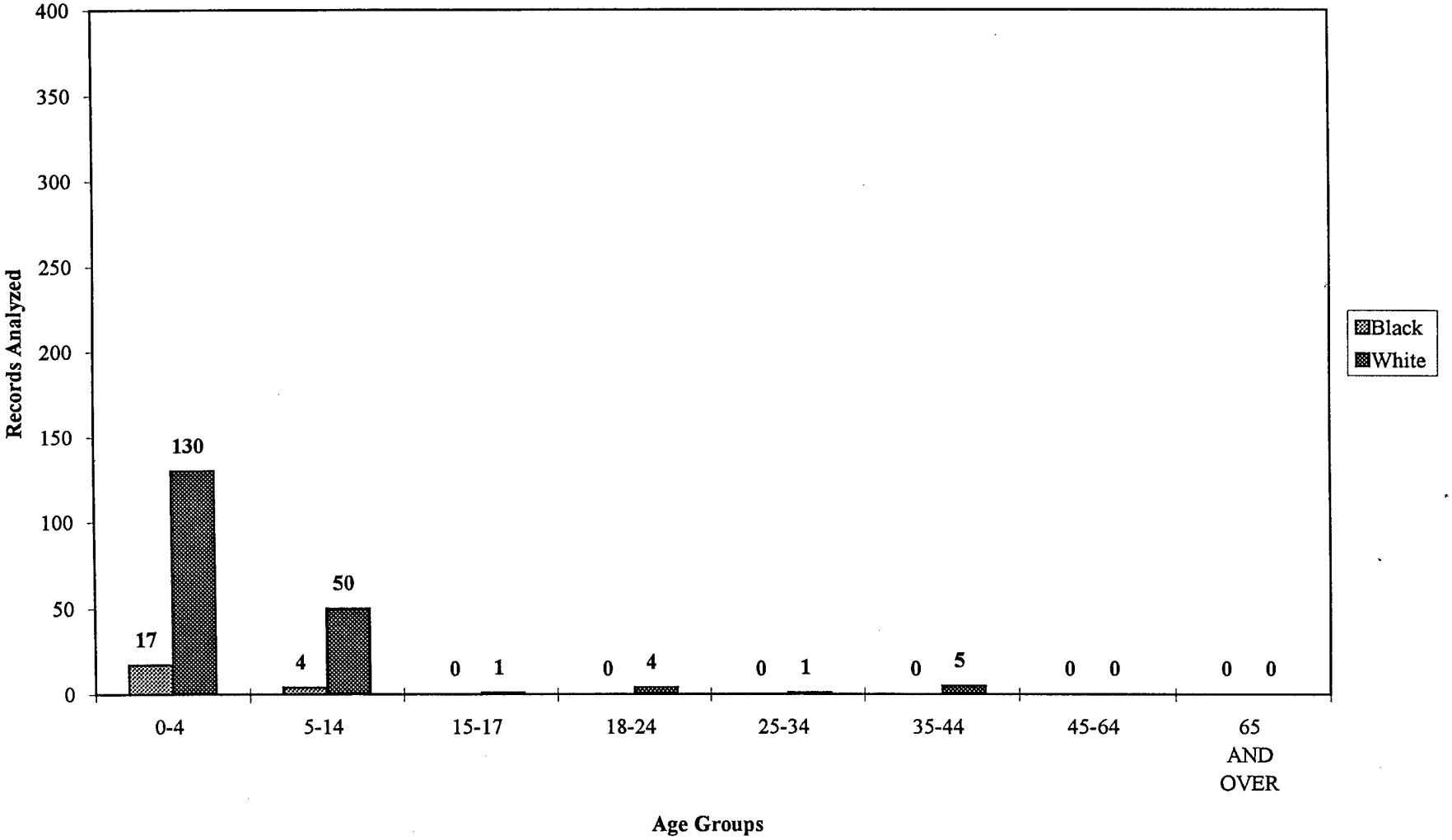
ICD-9-CM (381) Otitis Media 1993



ICD-9-CM (381) Otitis Media 1994



ICD-9-CM (381) Otitis Media 1995



Appendix D
CHI Square Calculation
ICD-9-CM 381 Otitis Media

Principle Diagnosis 381 Otitis Media - 1993						
		w/disease	wo/disease			
	Black	39	72109	72148		
	White	475	310624	311099		
		514	382733	383247		
	(expected	96.76	72051.24			
		417.24	310681.76			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		39	96.76	-57.76	3336.218	34.47931
		475	417.24	57.76	3336.218	7.99592
		72109	72051.24	57.76	3336.218	0.046303
		310624	310681.8	-57.75	3335.063	0.010735
					x(2)	42.53226
Principle Diagnosis 381 Otitis Media - 1994						
		w/disease	wo/disease			
	Black	44	68987	69031		
	White	412	298128	298540		
		456	367115	367571		
	(expected	85.64	68945.36			
		370.36	298169.64			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		44	85.64	-41.64	1733.89	20.24626
		412	370.36	41.64	1733.89	4.681633
		68987	68945.36	41.64	1733.89	0.025149
		298128	298169.6	-41.64	1733.89	0.005815
					x(2)	24.95886
Principle Diagnosis 381 Otitis Media - 1995						
		w/disease	wo/disease			
	Black	21	68248	68269		
	White	191	293759	293950		
		212	362007	362219		
	(expected	39.96	68229.04			
		172.04	293777.96			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		21	39.96	-18.96	359.4816	8.996036
		191	172.04	18.96	359.4816	2.089523
		68248	68229.04	18.96	359.4816	0.005269
		293759	293778	-18.96	359.4816	0.001224
					x(2)	11.09205

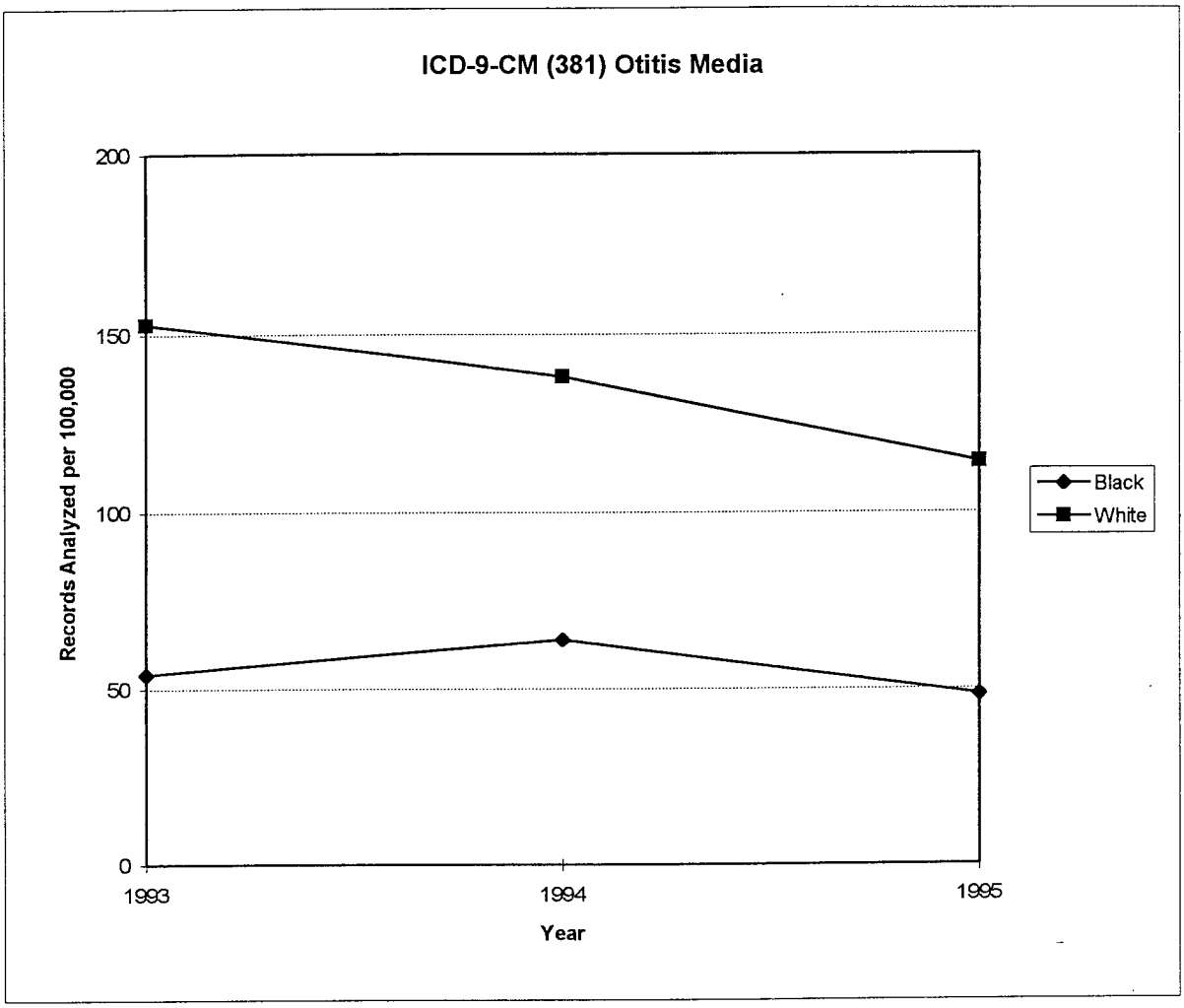
Appendix D
Confidence Interval Calculation
ICD-9-CM 381 Otitis Media

1993								
	Black	39	sqrt	6.24	Black pop	72148		
	White	475	sqrt	21.79	White pop	311099		
Black					White			
1	39/72148x100000=		54.06		1	475/311099x100000=		152.68
2	6.24x1.96=		12.23		2	21.79x1.96=		42.71
3	39+12.23=		51.23		3	475+42.71=		517.71
4	39-12.23=		26.77		4	475-42.71=		432.29
5	100000/72148=		1.39		5	100000/311099=		0.32
CI					**CI**			
6	1.39x51.23=		71.01		6	.32x517.71=		166.41
7	1.39x26.77=		37.10		7	.32x432.29=		138.96
1994								
	Black	44	sqrt	6.63	Black pop	69031		
	White	412	sqrt	20.29	White pop	298540		
Black					White			
1	63.74				1	138.00		
2	12.99				2	39.77		
3	56.99				3	451.77		
4	31.01				4	372.23		
5	1.45				5	0.33		
CI					**CI**			
6	82.56				6	151.33		
7	44.91				7	124.68		
1995								
	Black	33	sqrt	5.74	Black pop	68269		
	White	335	sqrt	18.3	White pop	293950		
Black					White			
1	48.34				1	113.96		
2	11.25				2	35.87		
3	44.25				3	370.87		
4	21.75				4	299.13		
5	1.46				5	0.34		
CI					**CI**			
6	64.82				6	126.17		
7	31.86				7	101.76		

Appendix D
Odds Ratio Calculation
ICD-9-CM 381 Otitis Media

Year	Race	Records	R/population	Rate	Odds Ratio
93	B	39	72148	0.000541	
	W	475	311099	0.001527	2.82458523
	BM	23	39684	0.00058	
	WM	286	182397	0.001568	2.70542779
	BF	16	31129	0.000514	
	WF	189	128702	0.001469	2.85707536
	BF	16	31129	0.000514	
	BM	23	39684	0.00058	1.12760653
	WF	189	128702	0.001469	
	WM	286	182397	0.001568	1.06775554
94	B	44	69031	0.000637	
	W	412	298540	0.00138	2.16514096
	BM	26	38144	0.000682	
	WM	259	171500	0.00151	2.21558556
	BF	18	30887	0.000583	
	WF	153	127040	0.001204	2.06658926
	BF	18	30887	0.000583	
	BM	26	38144	0.000682	1.16963495
	WF	153	127040	0.001204	
	WM	259	171500	0.00151	1.25396292
95	B	21	68269	0.000308	
	W	191	293950	0.00065	2.11234159
	BM	12	37516	0.00032	
	WM	108	167457	0.000645	2.01630269
	BF	9	30753	0.000293	
	WF	77	126493	0.000609	2.08002814
	BF	9	30753	0.000293	
	BM	12	37516	0.00032	1.09297366
	WF	77	126493	0.000609	
	WM	108	167457	0.000645	1.05948843

Appendix D



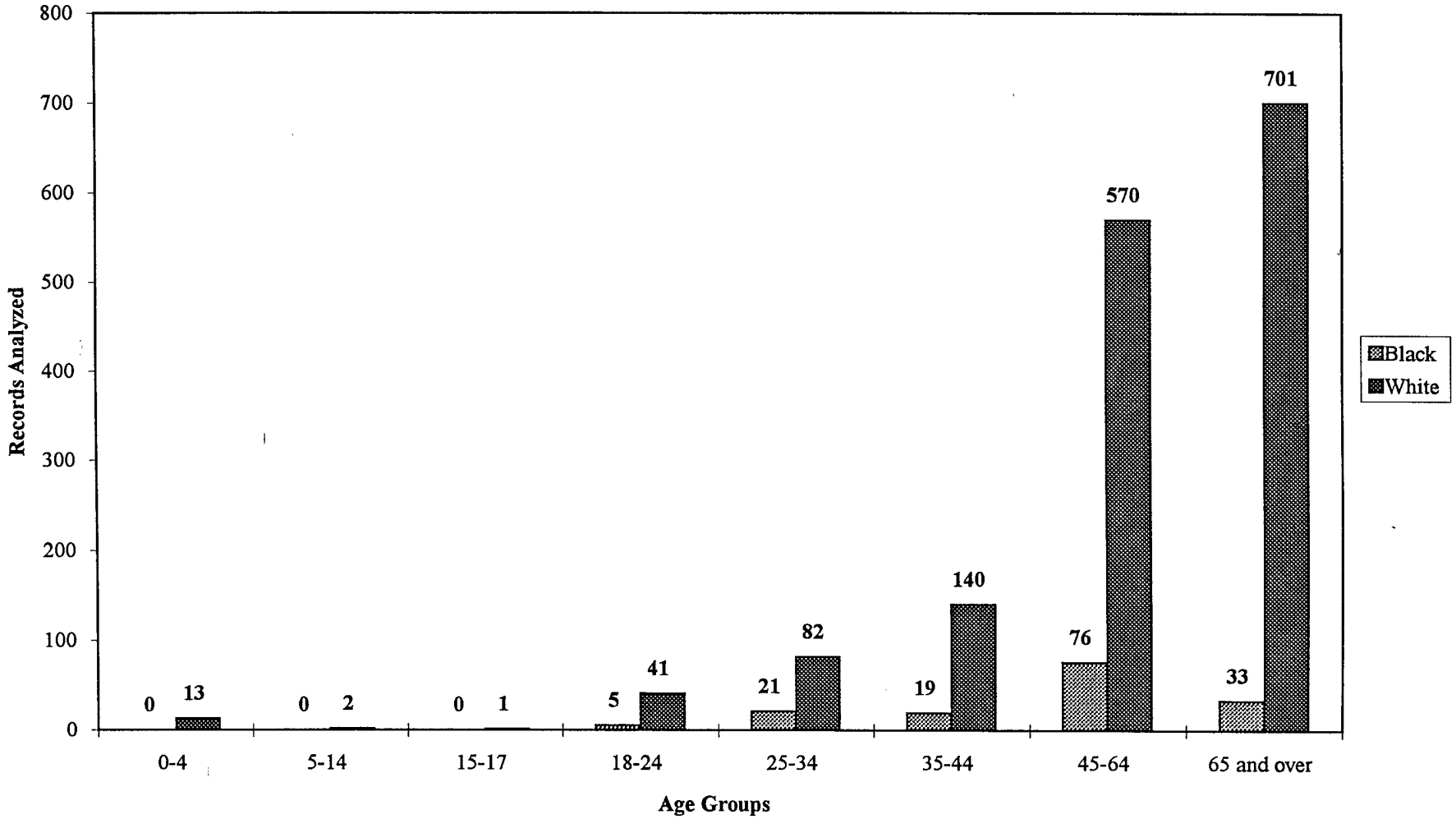
Records Analyzed per 100,000, confidence interval in parentheses

Race	1993	1994	1995
Black	54.06 (37.10, 71.01)	63.74 (44.91, 82.56)	48.34 (31.86, 64.82)
White	152.68 (138.96, 166.41)	138 (124.68, 151.33)	113.96 (101.76, 126.17)

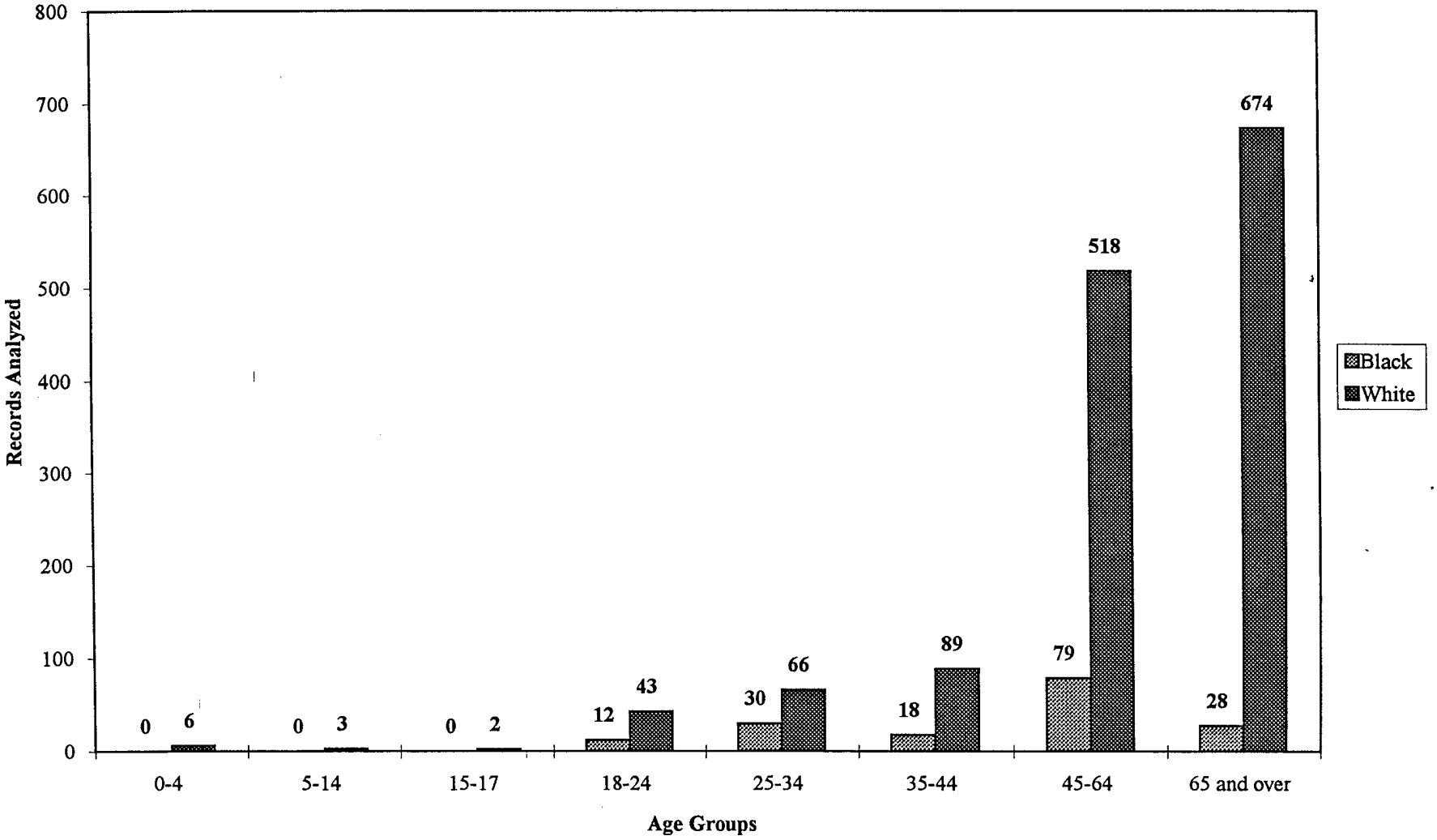
Appendix E
Age Group Dispersion
ICD-9-CM 401-429
Heart Disease

	1993	1994	1995			1993	1994	1995
	Black	Black	Black			White	White	White
0-4	0	0	1		0-4	13	6	3
5-14	0	0	1		5-14	2	3	2
15-17	0	0	0		15-17	1	2	3
18-24	5	12	8		18-24	41	43	47
25-34	21	30	18		25-34	82	66	48
35-44	19	18	12		35-44	140	89	122
45-64	76	79	64		45-64	570	518	508
65 and ove	33	28	20		65 and ove	701	674	626
	154	167	124			1550	1401	1359
Gender					Gender			
Male	100	125	87		Male	1080	963	897
Female	54	42	37		Female	470	438	462

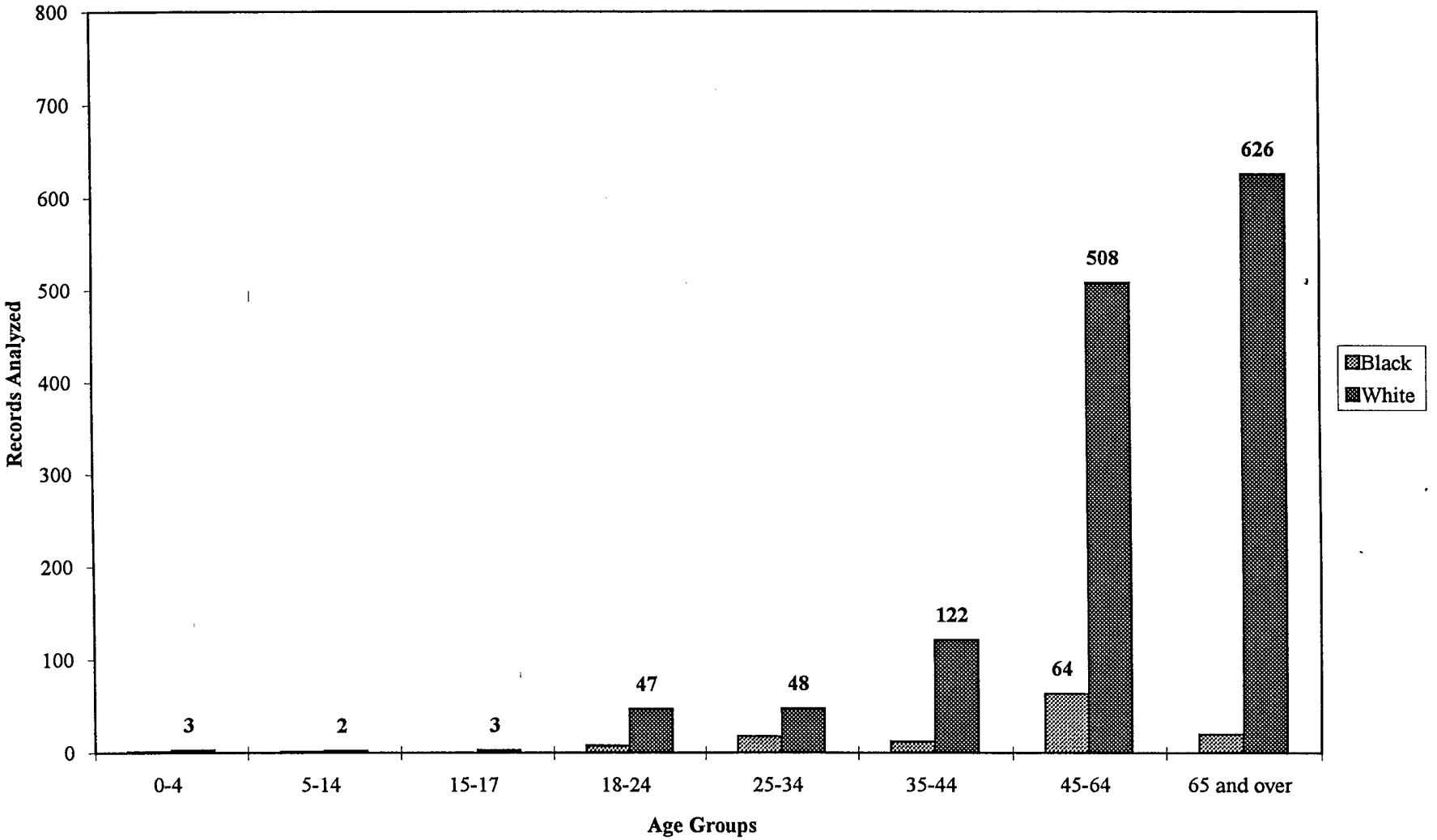
ICD-9-CM (401-429) Heart Disease 1993



ICD-9-CM (401-429) Heart Disease 1994



ICD-9-CM (401-429) Heart Disease 1995



Appendix E
CHI Square Calculation .
ICD-9-CM 401-429
Heart Disease

Principle Diagnosis 401 - 429 Heart Disease - 1993						
		w/disease	wo/disease			
	Black	154	71994	72148		
	White	1550	309549	311099		
		1704	381543	383247		
	(expected	320.79	71827.21			
		1383.21	309715.79			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		154	320.79	-166.79	27818.9	86.71999
		1550	1383.21	166.79	27818.9	20.11184
		71994	71827.21	166.79	27818.9	0.387303
		309549	309715.8	-166.79	27818.9	0.089821
					x(2)	107.309
Principle Diagnosis 401 - 429 Heart Disease - 1994						
		w/disease	wo/disease			
	Black	167	68864	69031		
	White	1401	297139	298540		
		1568	366003	367571		
	(expected	294.48	68736.52			
		1273.52	297266.48			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		167	294.48	-127.48	16251.15	55.18592
		1401	1273.52	127.48	16251.15	12.76081
		68864	68736.52	127.48	16251.15	0.236427
		297139	297266.5	-127.48	16251.15	0.054669
					x(2)	68.23783
Principle Diagnosis 401 - 429 Heart Disease - 1995						
		w/disease	wo/disease			
	Black	124	68145	68269		
	White	1359	292591	293950		
		1483	360736	362219		
	(expected	279.51	67989.49			
		1203.49	292746.51			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		124	279.51	-155.51	24183.36	86.52055
		1359	1203.49	155.51	24183.36	20.09436
		68145	67989.49	155.51	24183.36	0.355693
		292591	292746.5	-155.51	24183.36	0.082609
					x(2)	107.0532

Appendix E
Confidence Interval Calculation
ICD-9-CM 401-429
Heart Disease

1993								
	Black	154	sqrt	12.4	Black pop	72148		
	White	1550	sqrt	39.37	White pop	311099		
Black					White			
1	154/72148x100000=		213.45		1	1550/311099x100000		498.23
2	12.4x1.96=		24.30		2	39.37x1.96=		77.17
3	154+12.4=		178.30		3	1550+77.17=		1627.17
4	154-24.3=		129.70		4	1550-77.17=		1472.83
5	100000/72148=		1.39		5	100000/311099=		0.32
CI					**CI**			
6	1.39x29.88=		247.14		6	..32x1627.17=		523.04
7	1.39x12.02=		179.76		7	.32x1472.83=		473.43
1994								
	Black	167	sqrt	12.92	Black pop	69031		
	White	1401	sqrt	37.42	White pop	298540		
Black					White			
1	241.92				1	469.28		
2	25.32				2	73.34		
3	192.32				3	1474.34		
4	141.68				4	1327.66		
5	1.45				5	0.33		
CI					**CI**			
6	278.60				6	493.85		
7	205.24				7	444.72		
1995								
	Black	124	sqrt	11.13	Black pop	68269		
	White	1359	sqrt	36.86	White pop	293950		
Black					White			
1	181.63				1	462.32		
2	21.81				2	72.25		
3	145.81				3	1431.25		
4	102.19				4	1286.75		
5	1.46				5	0.34		
CI					**CI**			
6	213.59				6	486.90		
7	149.68				7	437.75		

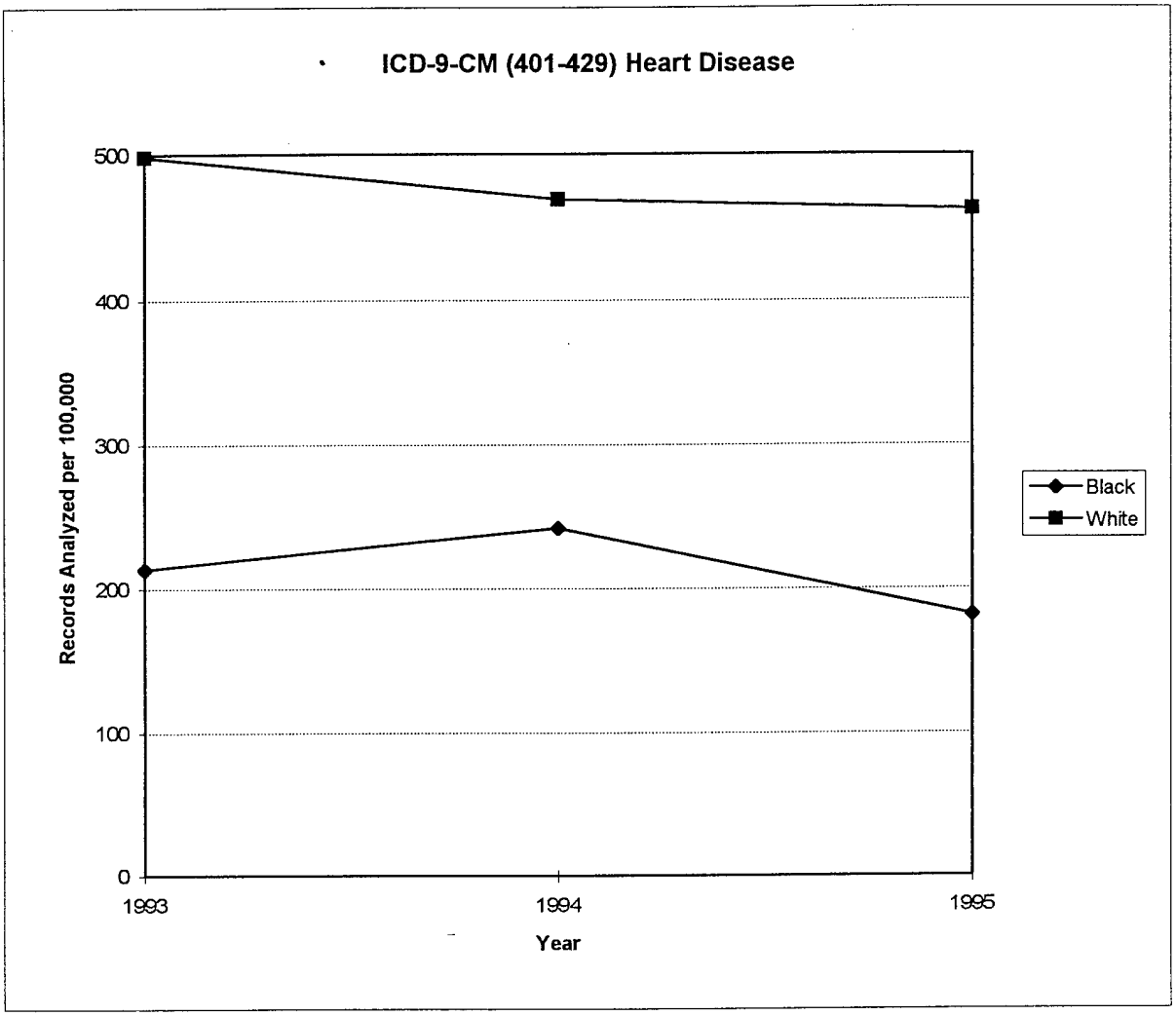
Appendix E
Odds Ratio Calculation .
ICD-9-CM 401-429
Heart Disease

Year	Race	Records	R/population	Rate	Odds Ratio
93	B	154	72148	0.002135	
	W	1550	311099	0.004982	2.33419244
	BM	100	39684	0.00252	
	WM	1080	182397	0.005921	2.34974917
	BF	54	31129	0.001735	
	WF	470	128702	0.003652	2.10515449
	BF	54	31129	0.001735	
	BM	100	39684	0.00252	1.45263321
	WF	470	128702	0.003652	
	WM	1080	182397	0.005921	1.62141245
94	B	167	69031	0.002419	
	W	1401	298540	0.004693	1.93982834
	BM	125	38144	0.003277	
	WM	963	171500	0.005615	1.71347741
	BF	42	30887	0.00136	
	WF	438	127040	0.003448	2.53547926
	BF	42	30887	0.00136	
	BM	125	38144	0.003277	2.40996212
	WF	438	127040	0.003448	
	WM	963	171500	0.005615	1.6286529
95	B	124	68269	0.001816	
	W	1359	293950	0.004623	2.54535199
	BM	87	37516	0.002319	
	WM	897	167457	0.005357	2.309864
	BF	37	30753	0.001203	
	WF	462	126493	0.003652	3.03571675
	BF	37	30753	0.001203	
	BM	87	37516	0.002319	1.92747383
	WF	462	126493	0.003652	
	WM	897	167457	0.005357	1.46660666

Appendix E
Odds Ratio Calculation
ICD-9-CM 401-429
Heart Disease

Year	Race	Records	R/population	Rate	Odds Ratio
1993					
18-24	Black	5	18116	0.000276	
18-24	White	41	87857	0.000467	1.69082942
25-34	Black	21	18065	0.001162	
25-34	White	82	69290	0.001183	1.01803325
35-44	Black	19	12665	0.0015	
35-44	White	140	41288	0.003391	2.26024638
45-64	Black	76	2471	0.030757	1.11317955
45-64	White	570	20630	0.02763	
65+	Black	33	56	0.589286	
65+	White	701	581	1.20654	2.04746258
1994					
18-24	Black	12	15498	0.000774	1.4179294
18-24	White	43	78744	0.000546	
25-34	Black	30	16814	0.001784	1.76892633
25-34	White	66	65434	0.001009	
35-44	Black	18	9054	0.001988	
35-44	White	89	40534	0.002196	1.10443085
45-64	Black	79	1753	0.045066	2.05004989
45-64	White	518	23564	0.021983	
65+	Black	28	79	0.35443	
65+	White	674	943	0.71474	2.0165884
1995					
18-24	Black	8	14482	0.000552	
18-24	White	47	75323	0.000624	1.1295587
25-34	Black	18	16291	0.001105	
25-34	White	48	35431	0.001355	1.22612025
35-44	Black	12	9380	0.001279	
35-44	White	122	40335	0.003025	2.36428247
45-64	Black	64	3377	0.018952	
45-64	White	508	25275	0.020099	1.06053165
65+	Black	20	98	0.204082	
65+	White	626	1416	0.44209	2.16624294

Appendix E



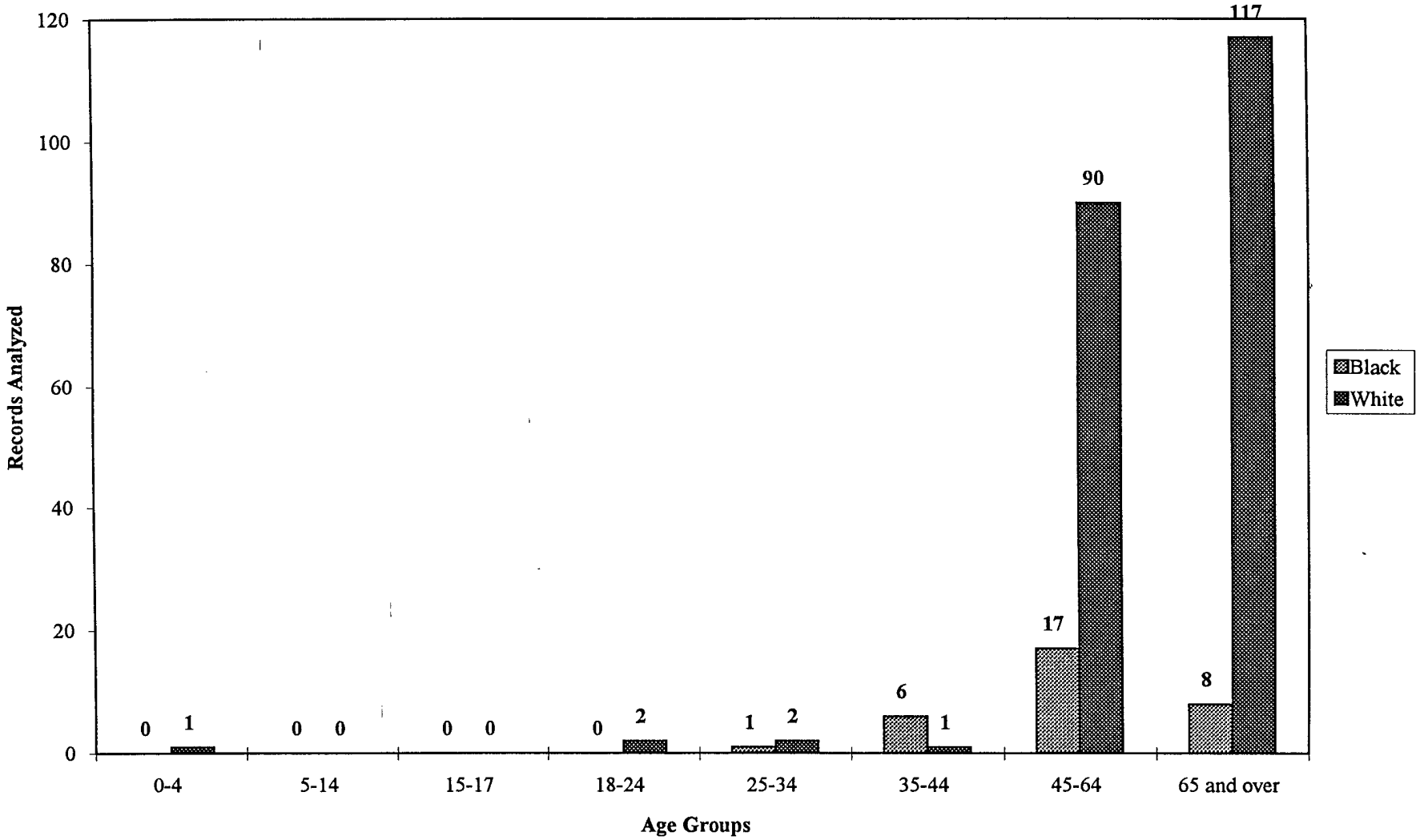
Records Analyzed per 100,000, confidence interval in parentheses

Race	1993	1994	1995
Black	213.45 (179.76, 247.14)	241.92 (205.24, 278.60)	181.63 (149.68, 213.59)
White	498.23 (473.43, 523.04)	469.28 (444.72, 493.85)	462.32 (437.75, 486.90)

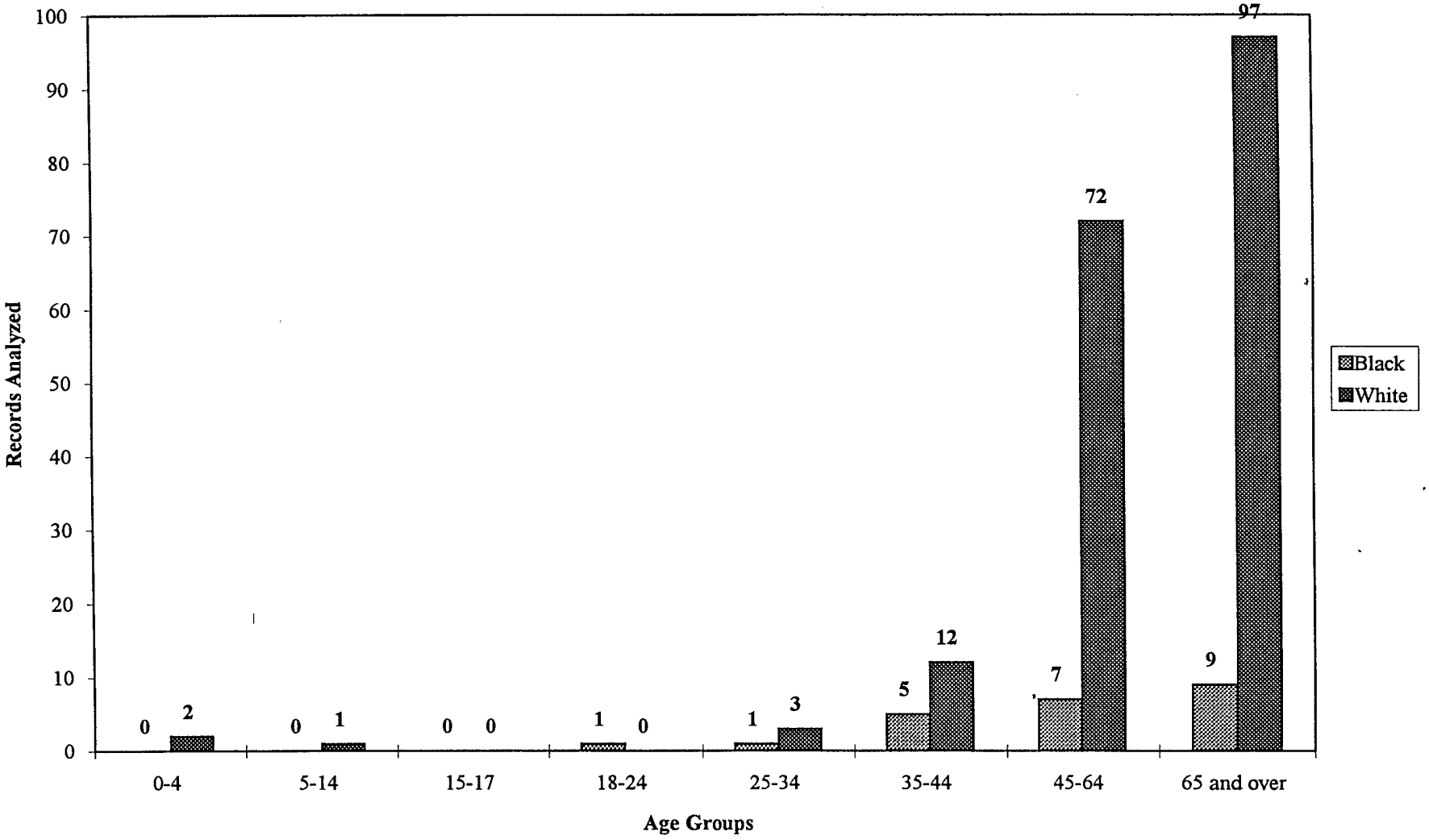
Appendix F
Age Group Dispersion
ICD-9-CM 430-438
Cerebrovascular Disease

	1993	1994	1995			1993	1994	1995
	Black	Black	Black			White	White	White
0-4	0	0	0		0-4	1	2	2
5-14	0	0	0		5-14	0	1	0
15-17	0	0	0		15-17	0	0	0
18-24	0	1	0		18-24	2	0	0
25-34	1	1	0		25-34	2	3	3
35-44	6	5	0		35-44	1	12	4
45-64	17	7	12		45-64	90	72	67
65 and ove	8	9	8		65 and ove	117	97	101
	32	23	20			213	187	177
Gender					Gender			
Male	21	16	12		Male	147	121	120
Female	11	7	8		Female	66	66	57

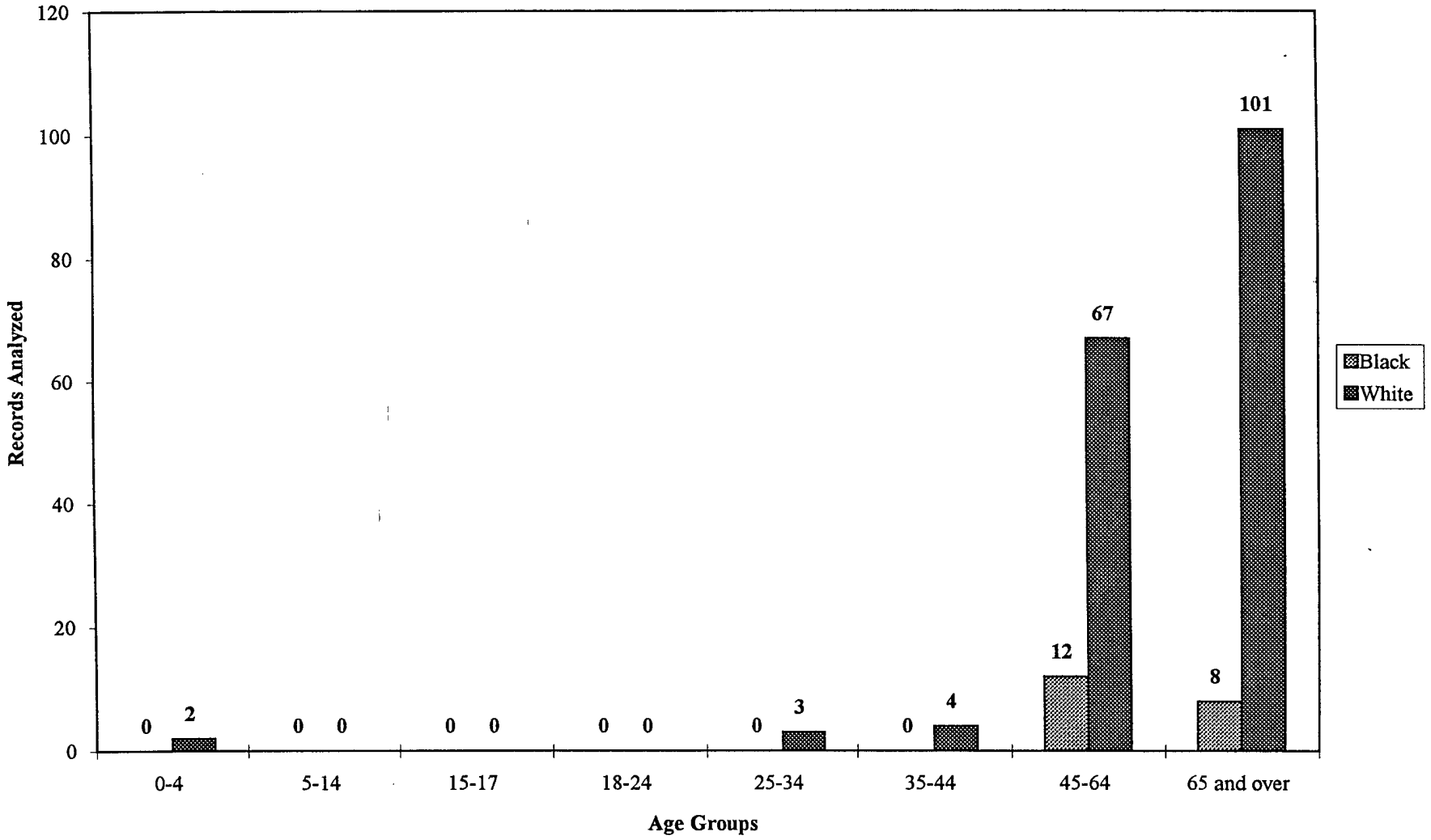
ICD-9-CM (430-438) Cerebrovascular Disease 1993



ICD-9-CM (430-438) Cerebrovascular Disease 1994



ICD-9-CM (430-438) Cerebrovascular Disease 1995



Appendix F
CHI Square Calculation
ICD-9-CM 430-438
Cerebrovascular Disease

Principle Diagnosis 430 - 438 Cerebrovascular Disease - 1993						
		w/disease	wo/disease			
	Black	32	72116	72148		
	White	213	310886	311099		
		245	383002	383247		
	(expected	46.12	72101.88			
		198.88	310900.12			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		32	46.12	-14.12	199.3744	4.322949
		213	198.88	14.12	199.3744	1.002486
		72116	72101.88	14.12	199.3744	0.002765
		310886	310900.1	-14.12	199.3744	0.000641
					x(2)	5.328841
Principle Diagnosis 430 - 438 Cerebrovascular Disease - 1994						
		w/disease	wo/disease			
	Black	23	69008	69031		
	White	187	298353	298540		
		210	367361	367571		
	(expected	39.44	68991.56			
		170.56	298369.44			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		23	39.44	-16.44	270.2736	6.852779
		187	170.56	16.44	270.2736	1.584625
		69008	68991.56	16.44	270.2736	0.003917
		298353	298369.4	-16.44	270.2736	0.000906
					x(2)	8.442227
Principle Diagnosis 430 - 438 Cerebrovascular Disease - 1995						
		w/disease	wo/disease			
	Black	20	68249	68269		
	White	177	293773	293950		
		197	362022	362219		
	(expected	37.13	68231.87			
		159.87	293790.13			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		20	37.13	-17.13	293.4369	7.90296
		177	159.87	17.13	293.4369	1.835472
		68249	68231.87	17.13	293.4369	0.004301
		293773	293790.1	-17.13	293.4369	0.000999
					x(2)	9.743731

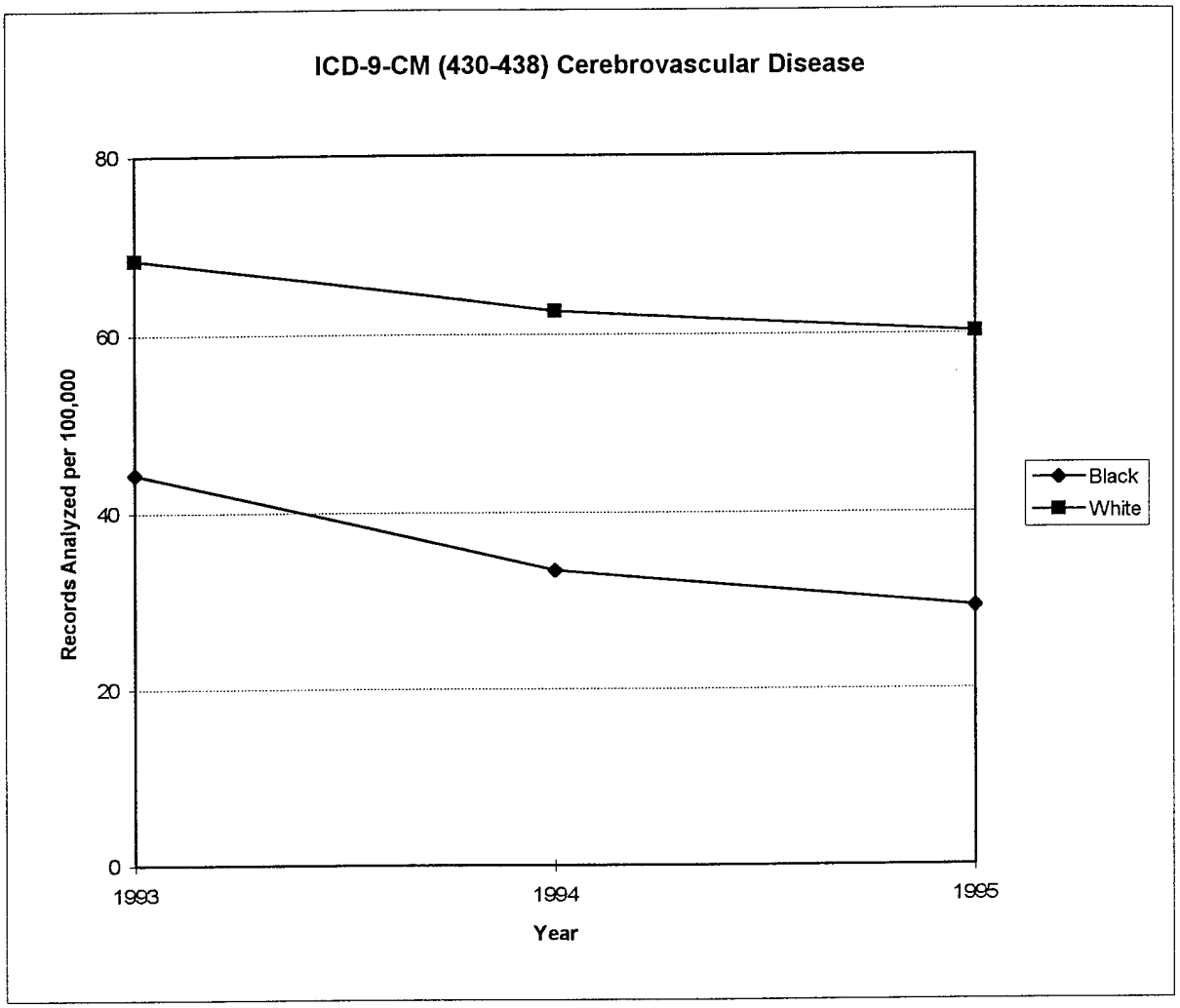
Appendix F
Confidence Interval Calculation
ICD-9-CM 430-438
Cerebrovascular Disease

1993								
	Black	32	sqrt	5.65	Black pop	72148		
	White	213	sqrt	14.59	White pop	311099		
Black					White			
1	32/72148x100000=		44.35		1	213/311099x100000=		68.47
2	5.65x1.96=		11.07		2	14.59x1.96=		28.60
3	32+11.07=		43.07		3	213+28.60=		241.60
4	32-11.07=		20.93		4	213-28.60=		184.40
5	100000/72148=		1.39		5	100000/311099=		0.32
CI					**CI**			
6	1.39x43.07=		59.70		6	.32x241.60=		77.66
7	1.39x20.93=		29.00		7	.32x184.4=		59.27
1994								
	Black	23	sqrt	4.79	Black pop	69031		
	White	187	sqrt	13.67	White pop	298540		
Black					White			
1	33.32				1	62.64		
2	9.39				2	26.79		
3	32.39				3	213.79		
4	13.61				4	160.21		
5	1.45				5	0.33		
CI					**CI**			
6	46.92				6	71.61		
7	19.72				7	53.66		
1995								
	Black	20	sqrt	4.47	Black pop	68269		
	White	177	sqrt	13.3	White pop	293950		
Black					White			
1	29.30				1	60.21		
2	8.76				2	26.07		
3	28.76				3	203.07		
4	11.24				4	150.93		
5	1.46				5	0.34		
CI					**CI**			
6	42.13				6	69.08		
7	16.46				7	51.35		

Appendix F
Odds Ratio Calculation
ICD-9-CM 430-438
Cerebrovascular Disease

Year	Race	Records	R/population	Rate	Odds Ratio
93	B	32	72148	0.000444	
	W	213	311099	0.000683	1.54367299
	BM	21	39684	0.000529	
	WM	147	182397	0.000806	1.52298558
	BF	11	31129	0.000353	
	WF	66	128702	0.000513	1.45121288
	BF	11	31129	0.000353	
	BM	21	39684	0.000529	1.49753278
	WF	66	128702	0.000513	
	WM	147	182397	0.000806	1.57159632
94	B	23	69031	0.000333	
	W	187	298540	0.000626	1.87998943
	BM	16	38144	0.000419	
	WM	121	171500	0.000706	1.68200583
	BF	7	30887	0.000227	
	WF	66	127040	0.00052	2.29235112
	BF	7	30887	0.000227	
	BM	16	38144	0.000419	1.85085091
	WF	66	127040	0.00052	
	WM	121	171500	0.000706	1.35805637
95	B	20	68269	0.000293	
	W	177	293950	0.000602	2.05538578
	BM	12	37516	0.00032	
	WM	120	167457	0.000717	2.24033633
	BF	8	30753	0.00026	
	WF	57	126493	0.000451	1.73223123
	BF	8	30753	0.00026	
	BM	12	37516	0.00032	1.22959537
	WF	57	126493	0.000451	
	WM	120	167457	0.000717	1.59026528

Appendix F



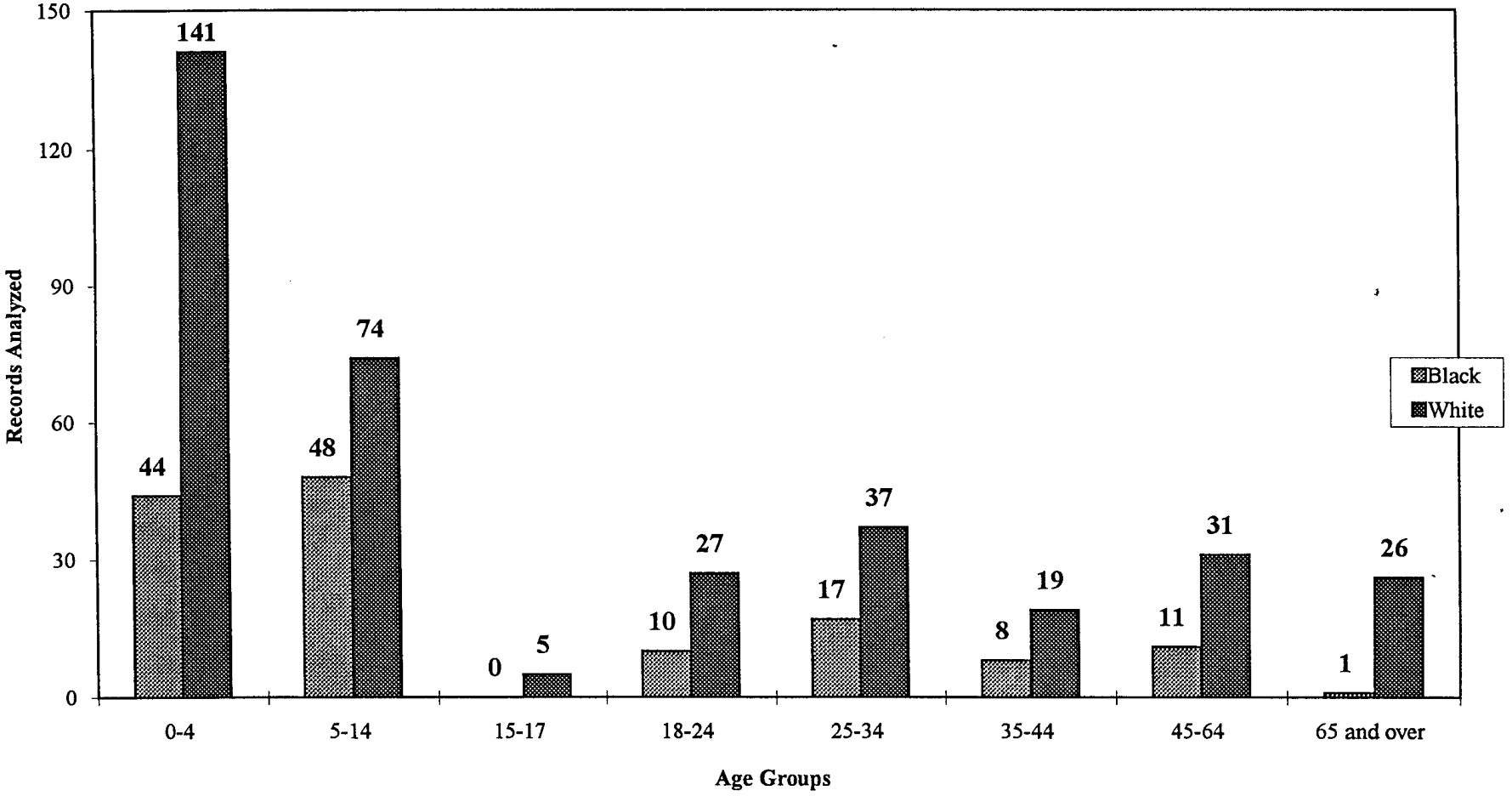
Records Analyzed per 100,000, confidence interval in parentheses

Race	1993	1994	1995
Black	44.35 (29, 59.70)	33.32 (19.72, 46.92)	29.3 (16.46, 42.13)
White	68.47 (59.27, 77.66)	62.64 (53.66, 71.61)	60.21 (51.35, 69.08)

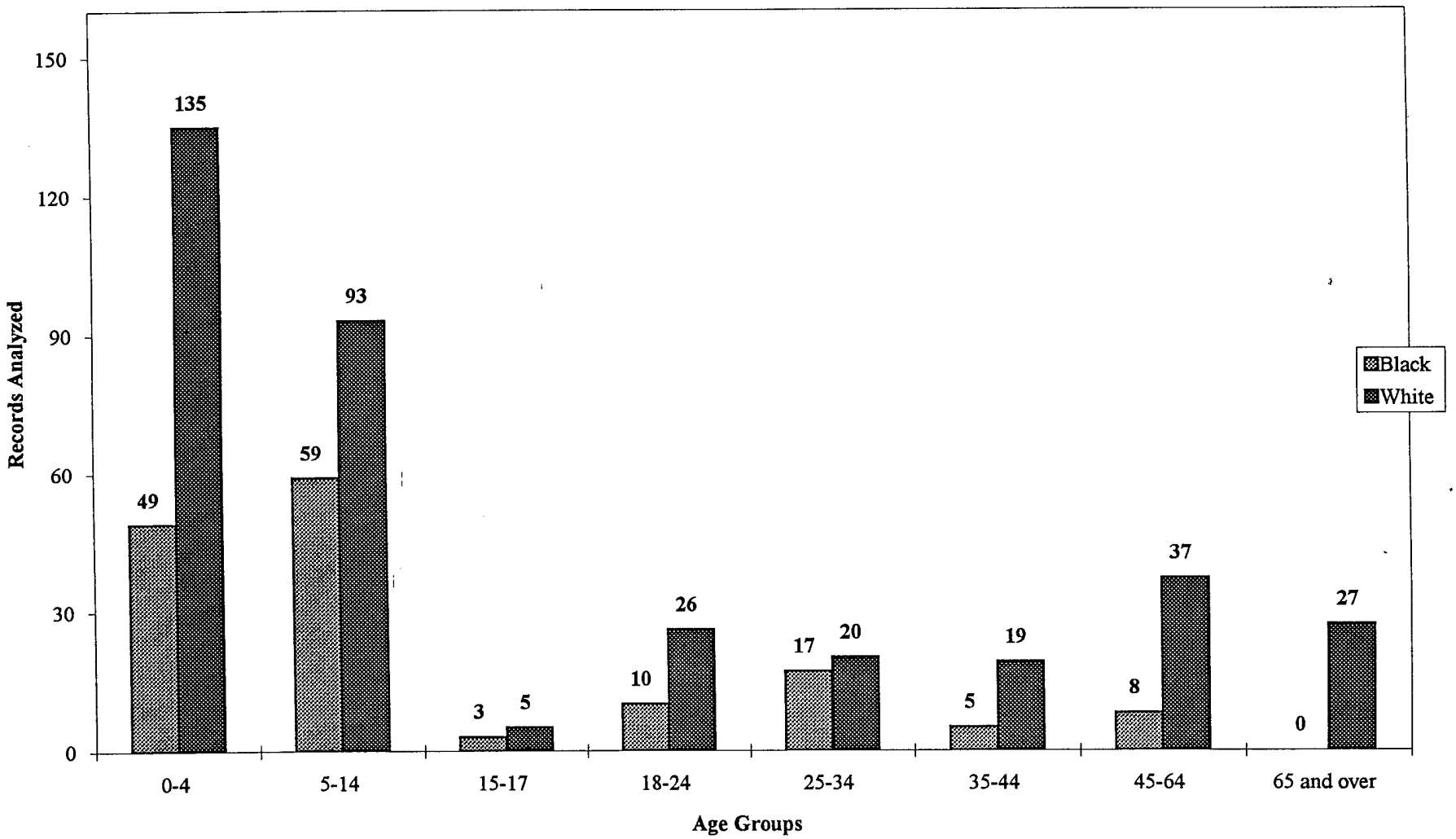
Appendix G
Age Group Dispersion
ICD-9-CM 493 Asthma

	1993	1994	1995			1993	1994	1995
	Black	Black	Black			White	White	White
0-4	44	49	38		0-4	141	135	88
5-14	48	59	38		5-14	74	93	52
15-17	0	3	1		15-17	5	5	5
18-24	10	10	4		18-24	27	26	27
25-34	17	17	10		25-34	37	20	14
35-44	8	5	11		35-44	19	19	5
45-64	11	8	6		45-64	31	37	22
65 and ove	1	0	4		65 and ove	26	27	8
	139	151	112			360	362	221
Gender					Gender			
Male	64	89	54		Male	176	175	106
Female	75	62	58		Female	184	187	115

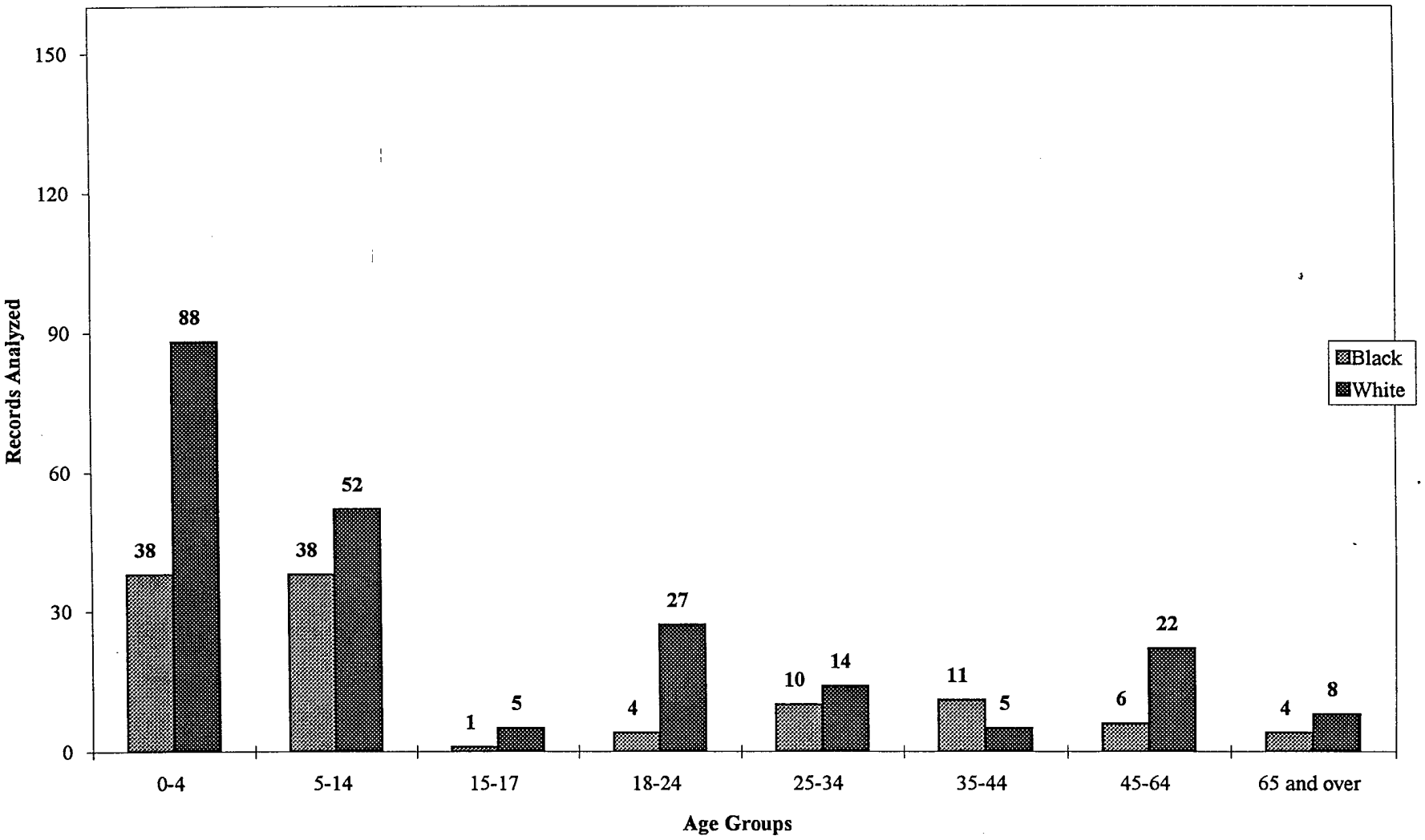
ICD-9-CM (493) Asthma 1993



ICD-9-CM (493) Asthma 1994



ICD-9-CM (493) Asthma 1995



Appendix G
CHI Square Calculation
ICD-9-CM 493 Asthma

Principle Diagnosis 493 Asthma - 1993						
		w/disease	wo/disease			
	Black	139	72009	72148		
	White	360	310739	311099		
		499	382748	383247		
	(expected	93.94	72054.06			
		405.06	310693.94			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		139	93.94	45.06	2030.404	21.61383
		360	405.06	-45.06	2030.404	5.0126
		72009	72054.06	-45.06	2030.404	0.028179
		310739	310693.94	45.06	2030.404	0.006535
					x(2)	26.66115
Principle Diagnosis 493 Asthma - 1994						
		w/disease	wo/disease			
	Black	151	68880	69031		
	White	362	298178	298540		
		513	367058	367571		
	(expected	96.34	68934.66			
		416.66	298123.34			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		151	96.34	54.66	2987.716	31.0122
		362	416.66	-54.66	2987.716	7.170632
		68880	68934.66	-54.66	2987.716	0.043341
		298178	298123.34	54.66	2987.716	0.010022
					x(2)	38.2362
Principle Diagnosis 493 Asthma - 1995						
		w/disease	wo/disease			
	Black	112	68157	68269		
	White	221	293729	293950		
		333	361886	362219		
	(expected	62.76	68206.24			
		270.24	293679.76			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		112	62.76	49.24	2424.578	38.63253
		221	270.24	-49.24	2424.578	8.971942
		68157	68206.24	-49.24	2424.578	0.035548
		293729	293679.76	49.24	2424.578	0.008256
					x(2)	47.64828

Appendix G
Confidence Interval Calculation
ICD-9-CM 493 Asthma

1993								
	Black	139	sqrt	11.78	Black pop	72148		
	White	360	sqrt	18.97	White pop	311099		
Black					White			
1	139/72148x100000=		192.66		1	360/311099x100000=		115.72
2	11.78x1.96=		23.09		2	18.97x1.96=		37.18
3	139+23.09=		162.09		3	360+37.18=		397.18
4	139-23.09=		115.91		4	360-37.18=		322.82
5	100000/72148=		1.39		5	100000/311099=		0.32
CI					**CI**			
6	1.39x162.09=		224.66		6	.32x397.18=		127.67
7	1.39x115.91=		160.66		7	.32x322.82=		103.77
1994								
	Black	151	sqrt	12.28	Black pop	69031		
	White	362	sqrt	19.02	White pop	298540		
Black					White			
1	218.74				1	121.26		
2	24.07				2	37.28		
3	175.07				3	399.28		
4	126.93				4	324.72		
5	1.45				5	0.33		
CI					**CI**			
6	253.61				6	133.74		
7	183.88				7	108.77		
1995								
	Black	112	sqrt	10.58	Black pop	68269		
	White	221	sqrt	14.86	White pop	293950		
Black					White			
1	164.06				1	75.18		
2	20.74				2	29.13		
3	132.74				3	250.13		
4	91.26				4	191.87		
5	1.46				5	0.34		
CI					**CI**			
6	194.43				6	85.09		
7	133.68				7	65.27		

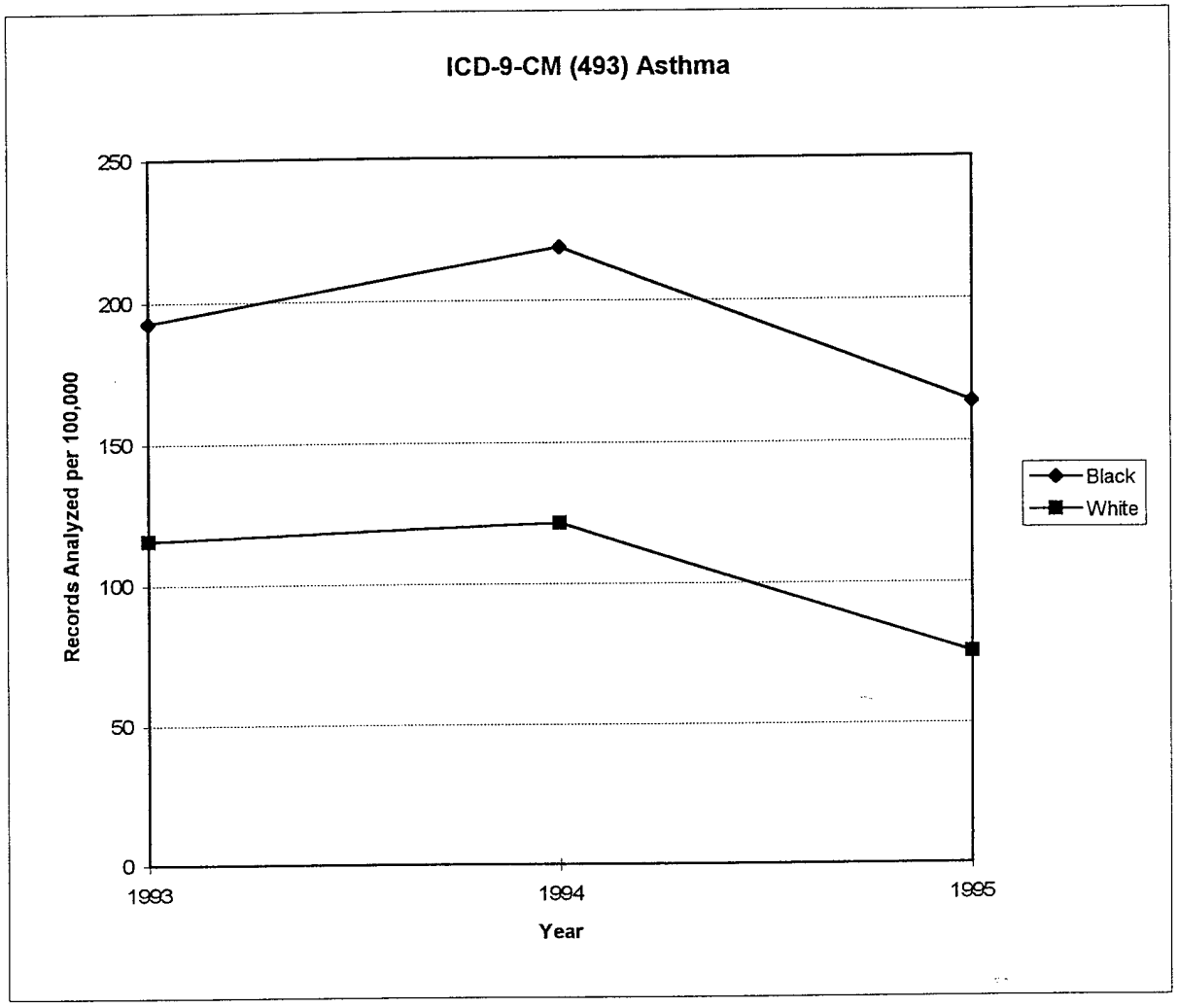
Appendix G
Odds Ratio Calculation
ICD-9-CM 493 Asthma

Year	Race	Records	R/population	Rate	Odds Ratio
93	B	139	72148	0.001927	1.664894114
	W	360	311099	0.001157	
	BM	64	39684	0.001613	1.671358276
	WM	176	182397	0.000965	
	BF	75	31129	0.002409	1.685247016
	WF	184	128702	0.00143	
	BF	75	31129	0.002409	1.685247016
	BM	64	39684	0.001613	
	WF	184	128702	0.00143	1.481622451
	WM	176	182397	0.000965	
94	B	151	69031	0.002187	1.803959323
	W	362	298540	0.001213	
	BM	89	38144	0.002333	2.286598154
	WM	175	171500	0.00102	
	BF	62	30887	0.002007	1.363687438
	WF	187	127040	0.001472	
	BF	62	30887	0.002007	
	BM	89	38144	0.002333	1.162379151
	WF	187	127040	0.001472	1.442537783
	WM	175	171500	0.00102	
95	B	112	68269	0.001641	2.182105139
	W	221	293950	0.000752	
	BM	54	37516	0.001439	2.273917342
	WM	106	167457	0.000633	
	BF	58	30753	0.001886	2.074479549
	WF	115	126493	0.000909	
	BF	58	30753	0.001886	1.310277468
	BM	54	37516	0.001439	
	WF	115	126493	0.000909	1.436245857
	WM	106	167457	0.000633	

Appendix G
Odds Ratio Calculation
ICD-9-CM 493 Asthma

Year	Race	Records	R/population	Rate	Odds Ratio
1993					
0-4	Black	44	9143	0.004812	1.119008225
0-4	White	141	32786	0.004301	
5-14	Black	48	13134	0.003655	2.359710098
5-14	White	74	47780	0.001549	
15-17	Black	0	2428	0	0
15-17	White	5	10887	0.000459	
18-24	Black	10	18116	0.000552	1.796181808
18-24	White	27	87857	0.000307	
25-34	Black	17	18065	0.000941	1.762299803
25-34	White	37	69290	0.000534	
35-44	Black	8	12665	0.000632	1.372634903
35-44	White	19	41288	0.00046	
45-64	Black	11	2471	0.004452	2.962493962
45-64	White	31	20630	0.001503	
65+	Black	1	56	0.017857	
65+	White	26	581	0.04475	2.506024096
1994					
0-4	Black	49	8975	0.00546	1.293199629
0-4	White	135	31977	0.004222	
5-14	Black	59	13179	0.004477	2.266425814
5-14	White	93	47082	0.001975	
15-17	Black	3	2479	0.00121	2.483743445
15-17	White	5	10262	0.000487	
18-24	Black	10	15498	0.000645	1.954197564
18-24	White	26	78744	0.00033	
25-34	Black	17	16814	0.001011	3.307892233
25-34	White	20	65434	0.000306	
35-44	Black	5	9054	0.000552	1.178135863
35-44	White	19	40534	0.000469	
45-64	Black	8	1753	0.004564	2.90639984
45-64	White	37	23564	0.00157	
65+	Black	0	79	0	
65+	White	27	943	0.028632	
1995					
0-4	Black	38	8486	0.004478	1.551309108
0-4	White	88	30486	0.002887	
5-14	Black	38	13587	0.002797	2.540669531
5-14	White	52	47238	0.001101	
15-17	Black	1	2568	0.000389	
15-17	White	5	9935	0.000503	1.292400604
18-24	Black	4	14482	0.000276	
18-24	White	27	75323	0.000358	1.297790847
25-34	Black	10	16291	0.000614	1.553487026
25-34	White	14	35431	0.000395	
35-44	Black	11	9380	0.001173	9.460234542
35-44	White	5	40335	0.000124	
45-64	Black	6	3377	0.001777	2.041214634
45-64	White	22	25275	0.00087	
65+	Black	4	98	0.040816	7.224489796
65+	White	8	1416	0.00565	

Appendix G



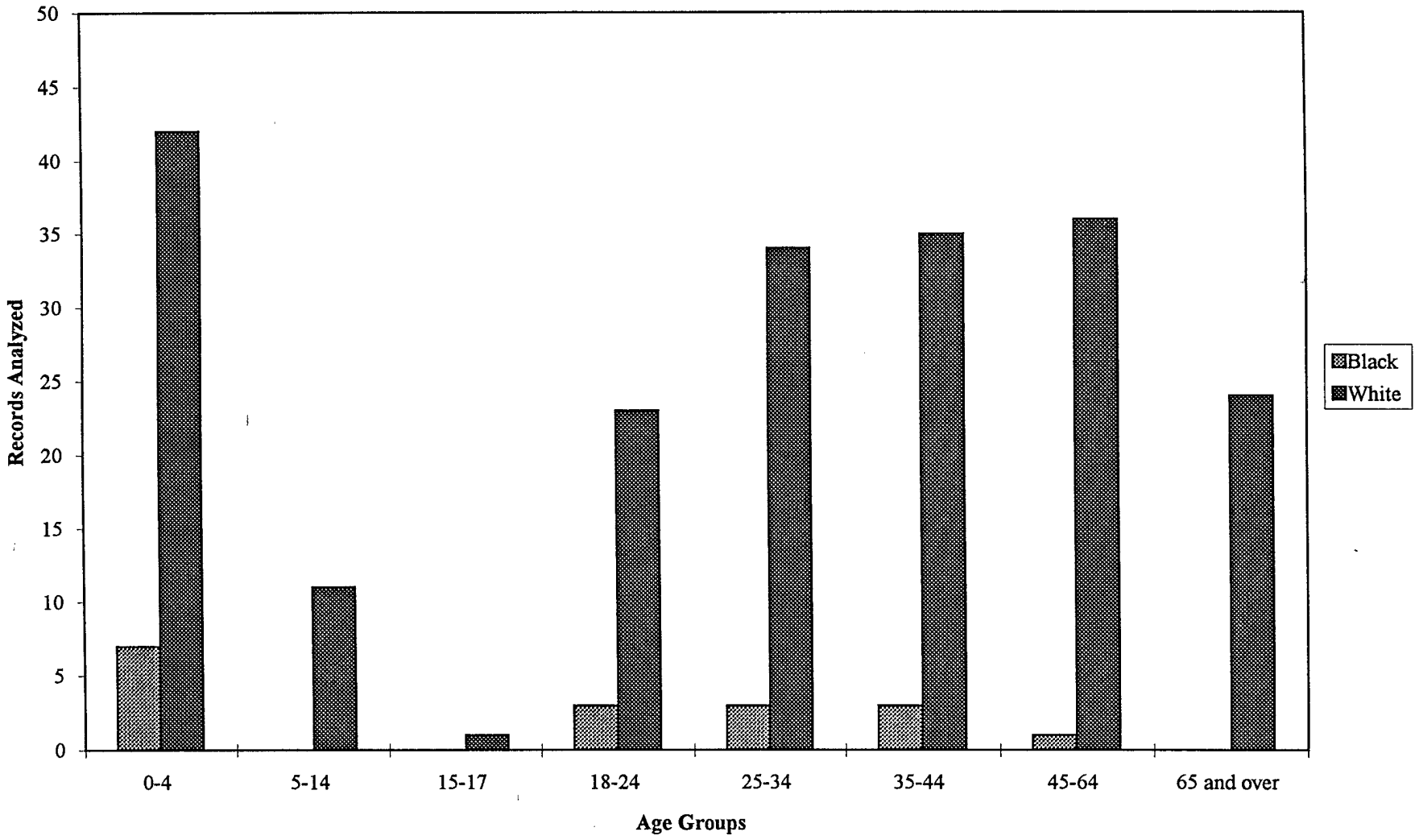
Records Analyzed per 100,000, confidence interval in parentheses

Race	1993	1994	1995
Black	192.66 (160.66, 224.66)	218.74 (183.88, 253.61)	164.06 (133.68, 194.43)
White	115.72 (103.77,127.77)	121.26 (108.77, 133.74)	75.18 (65.27, 85.09)

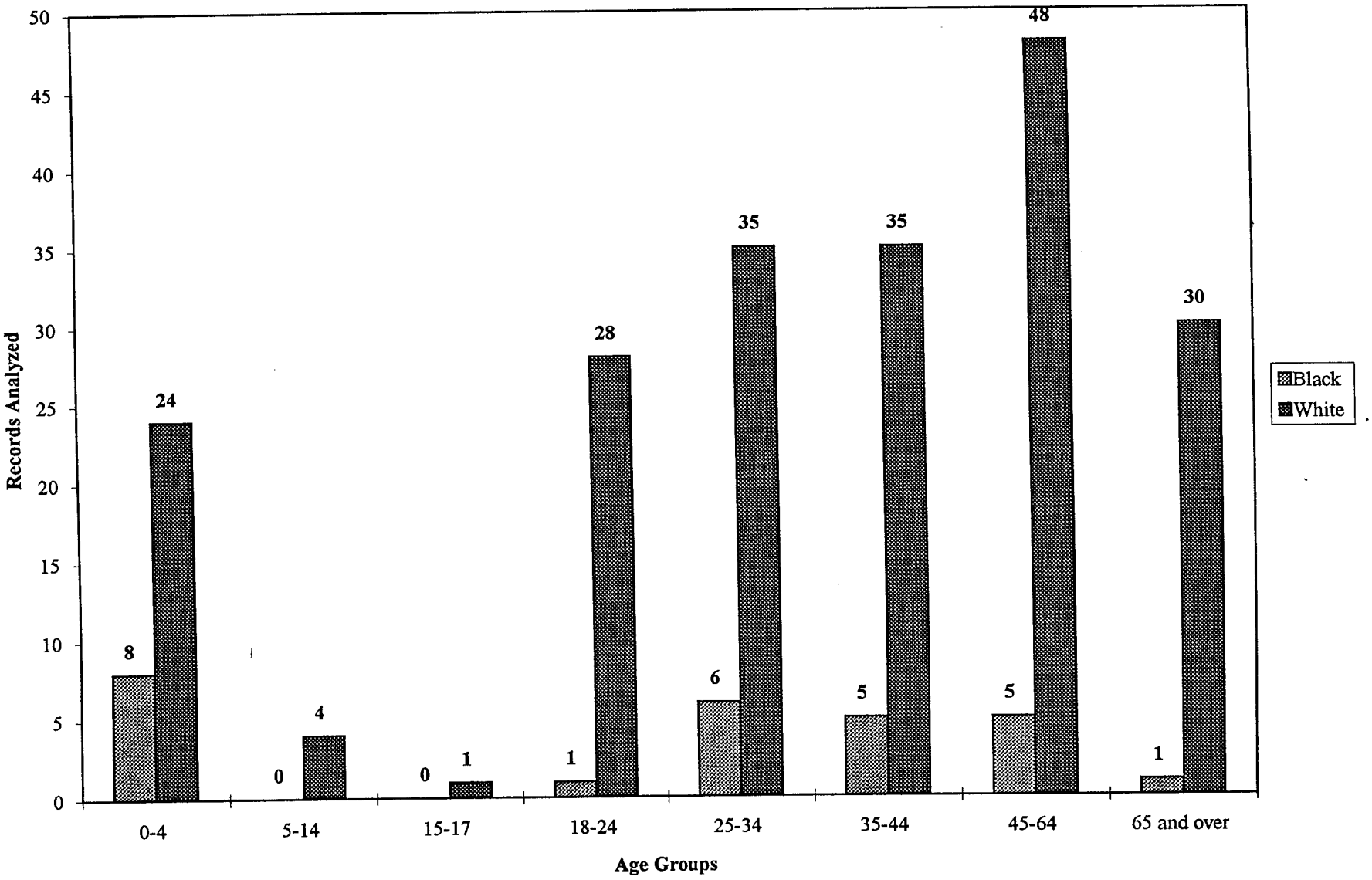
Appendix H
Age Group Dispersion
ICD-9-CM 530
Diseases of Esophagus

	1993	1994	1995			1993	1994	1995
	Black	Black	Black			White	White	White
0-4	7	8	3		0-4	42	24	22
5-14	0	0	1		5-14	11	4	3
15-17	0	0	0		15-17	1	1	1
18-24	3	1	2		18-24	23	28	21
25-34	3	6	5		25-34	34	35	33
35-44	3	5	7		35-44	35	35	30
45-64	1	5	4		45-64	36	48	39
65 and ove	0	1	2		65 and ove	24	30	18
	17	26	24			206	205	167
Gender					Gender			
Male	13	15	16		Male	130	149	111
Female	4	11	8		Female	76	56	56

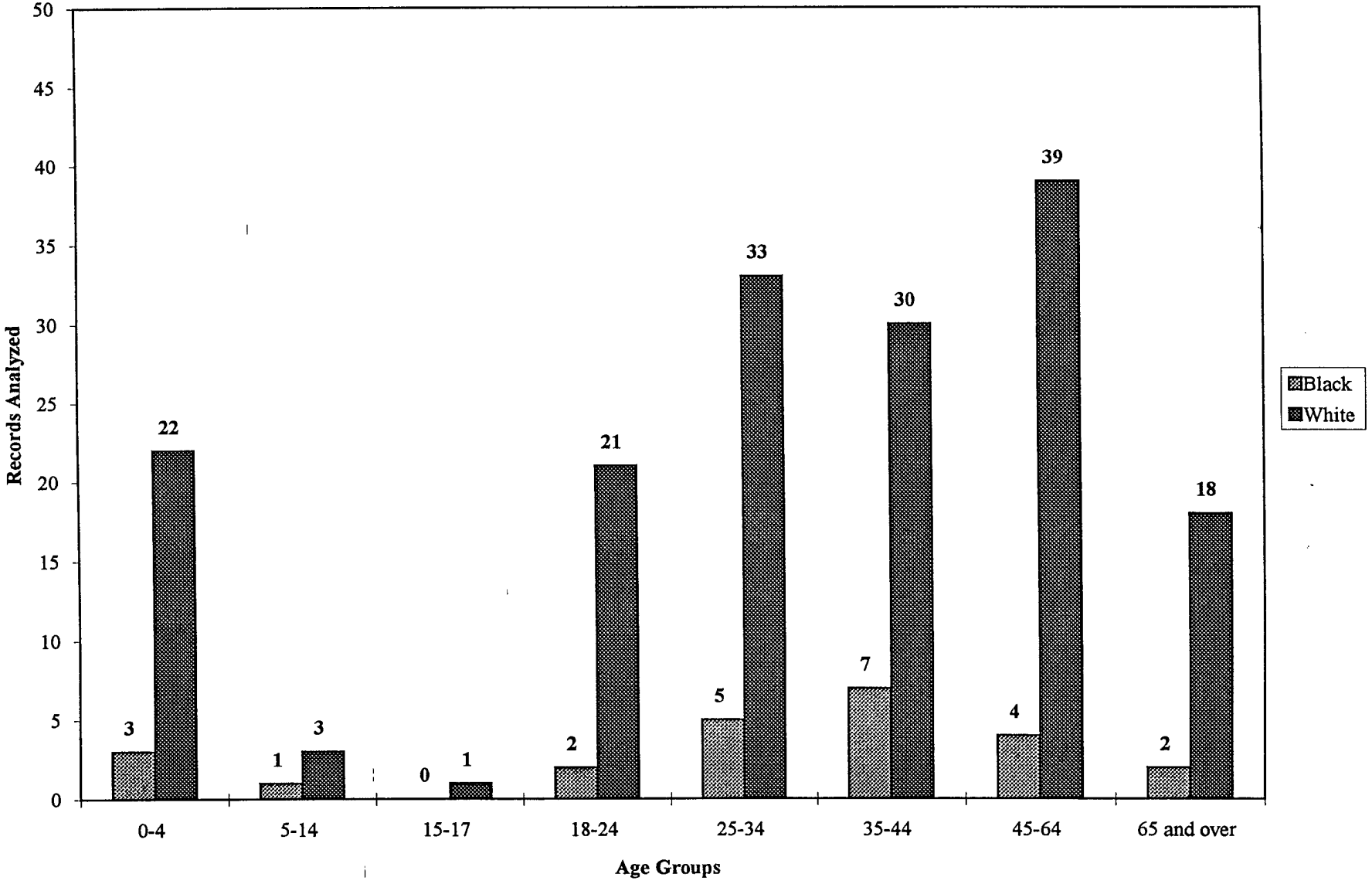
ICD-9-CM (530) Diseases of Esophagus 1993



ICD-9-CM (530) Diseases of Esophagus 1994



ICD-9-CM (530) Diseases of Esophagus 1995



Appendix H

CHI Square Calculation

ICD-9-CM 530

Diseases of Esophagus

Principle Diagnosis 530 Diseases of Esophagus - 1993						
		w/disease	wo/disease			
	Black	17	72131	72148		
	White	206	310893	311099		
		223	383024	383247		
	(expected	41.98	72106.02			
		181.02	310917.98			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		17	41.98	-24.98	624.0004	14.86423
		206	181.02	24.98	624.0004	3.447135
		72131	72106.02	24.98	624.0004	0.008654
		310893	310918	-24.98	624.0004	0.002007
					x(2)	18.32203
Principle Diagnosis 530 Diseases of Esophagus - 1994						
		w/disease	wo/disease			
	Black	26	69005	69031		
	White	205	298335	298540		
		231	367340	367571		
	(expected	43.38	68987.62			
		187.62	298352.38			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		26	43.38	-17.38	302.0644	6.963218
		205	187.62	17.38	302.0644	1.60998
		69005	68987.62	17.38	302.0644	0.004379
		298335	298352.4	-17.38	302.0644	0.001012
					x(2)	8.578589
Principle Diagnosis 530 Diseases of Esophagus - 1995						
		w/disease	wo/disease			
	Black	24	68245	68269		
	White	167	293783	293950		
		191	362028	362219		
	(expected	36.00	68233.00			
		155.00	293795.00			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		24	36	-12	144	4
		167	155	12	144	0.929032
		68245	68233	12	144	0.00211
		293783	293795	-12	144	0.00049
						4.931633

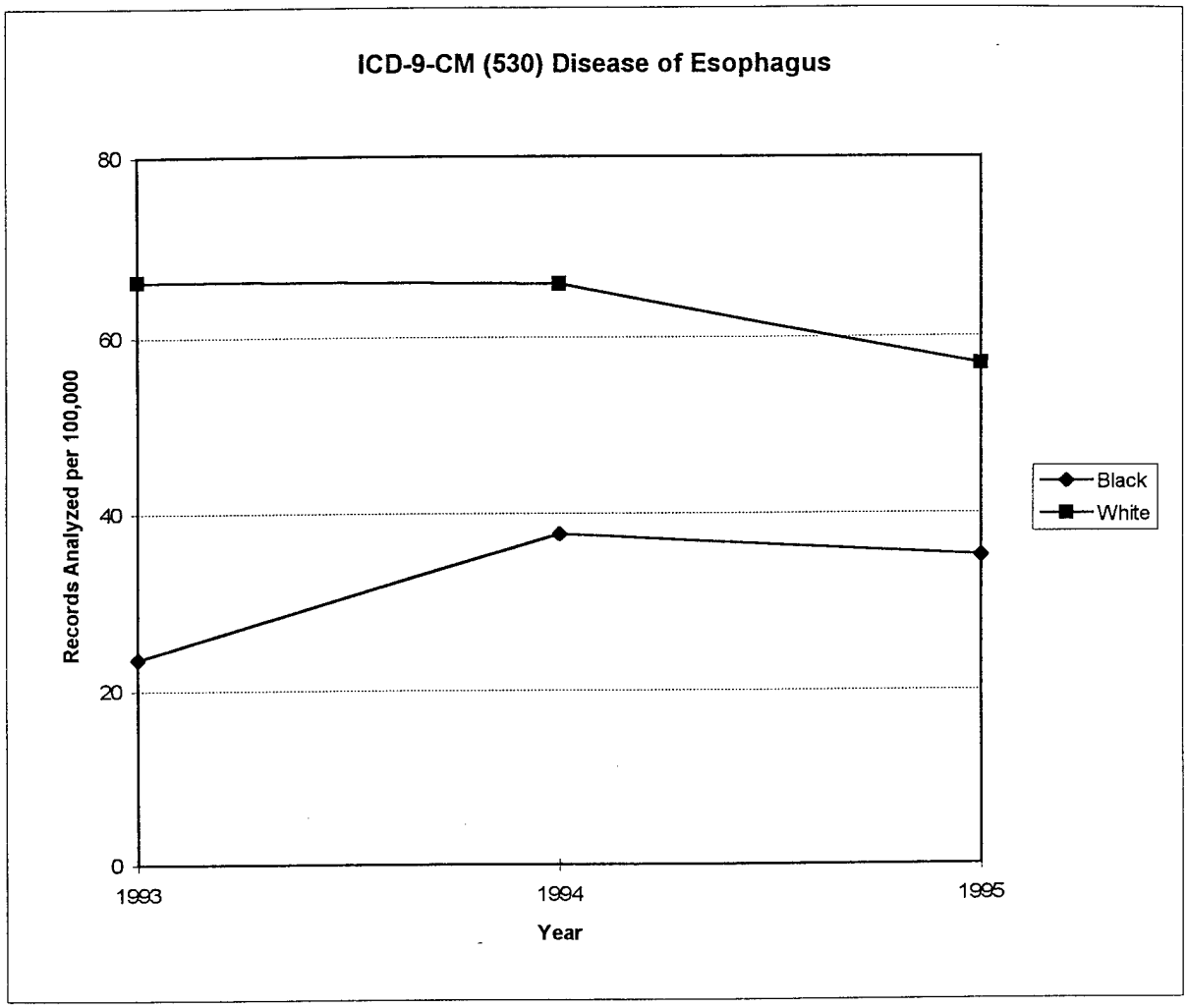
Appendix H
Confidence Interval Calculation
ICD-9-CM 530
Diseases of Esophagus

1993								
	Black	17	sqrt	4.12	Black pop	72148		
	White	206	sqrt	14.35	White pop	311099		
Black					White			
1	17/72148x100000=		23.56		1	206/311099x100000=		66.22
2	4.12x1.96=		8.08		2	14.35x1.96=		28.13
3	17+8.08=		25.08		3	206+28.13=		234.13
4	17-8.08+		8.92		4	206-28.13=		177.87
5	100000/72148=		1.39		5	100000/311099=		0.32
CI					**CI**			
6	1.39x25.08=		34.76		6	.32x234.13=		75.26
7	1.39x8.92=		12.37		7	.32x177.87=		57.18
1994								
	Black	26	sqrt	5.09	Black pop	69031		
	White	205	sqrt	14.31	White pop	311099		
Black					White			
1	37.66				1	65.90		
2	9.98				2	28.05		
3	35.98				3	233.05		
4	16.02				4	176.95		
5	1.45				5	0.32		
CI					**CI**			
6	52.12				6	74.91		
7	23.21				7	56.88		
1995								
	Black	24	sqrt	4.89	Black pop	68269		
	White	167	sqrt	12.92	White pop	293950		
Black					White			
1	35.16				1	56.81		
2	9.58				2	25.32		
3	33.58				3	192.32		
4	14.42				4	141.68		
5	1.46				5	0.34		
CI					**CI**			
6	49.19				6	65.43		
7	21.12				7	48.20		

Appendix H
Odds Ratio Calculation
ICD-9-CM 530
Diseases of Esophagus

Year	Race	Records	R/population	Rate	Odds Ratio
93	B	17	72148	0.000236	
	W	206	311099	0.000662	2.810243684
	BM	13	39684	0.000328	
	WM	130	182397	0.000713	2.175693679
	BF	4	31129	0.000128	
	WF	76	128702	0.000591	4.595507451
	BF	4	31129	0.000128	
	BM	13	39684	0.000328	2.549371283
	WF	76	128702	0.000591	
	WM	130	182397	0.000713	1.206972472
94	B	26	69031	0.000377	
	W	205	298540	0.000687	1.82314894
	BM	15	38144	0.000393	
	WM	149	171500	0.000869	2.209312342
	BF	11	30887	0.000356	
	WF	56	127040	0.000441	1.237743302
	BF	11	30887	0.000356	
	BM	15	38144	0.000393	1.104200827
	WF	56	127040	0.000441	
	WM	149	171500	0.000869	1.970945439
95	B	24	68269	0.000352	
	W	167	293950	0.000568	1.616051908
	BM	16	37516	0.000426	
	WM	111	167457	0.000663	1.554233326
	BF	8	30753	0.00026	
	WF	56	126493	0.000443	1.701841209
	BF	8	30753	0.00026	
	BM	16	37516	0.000426	1.639460497
	WF	56	126493	0.000443	
	WM	111	167457	0.000663	1.497263157

Appendix H



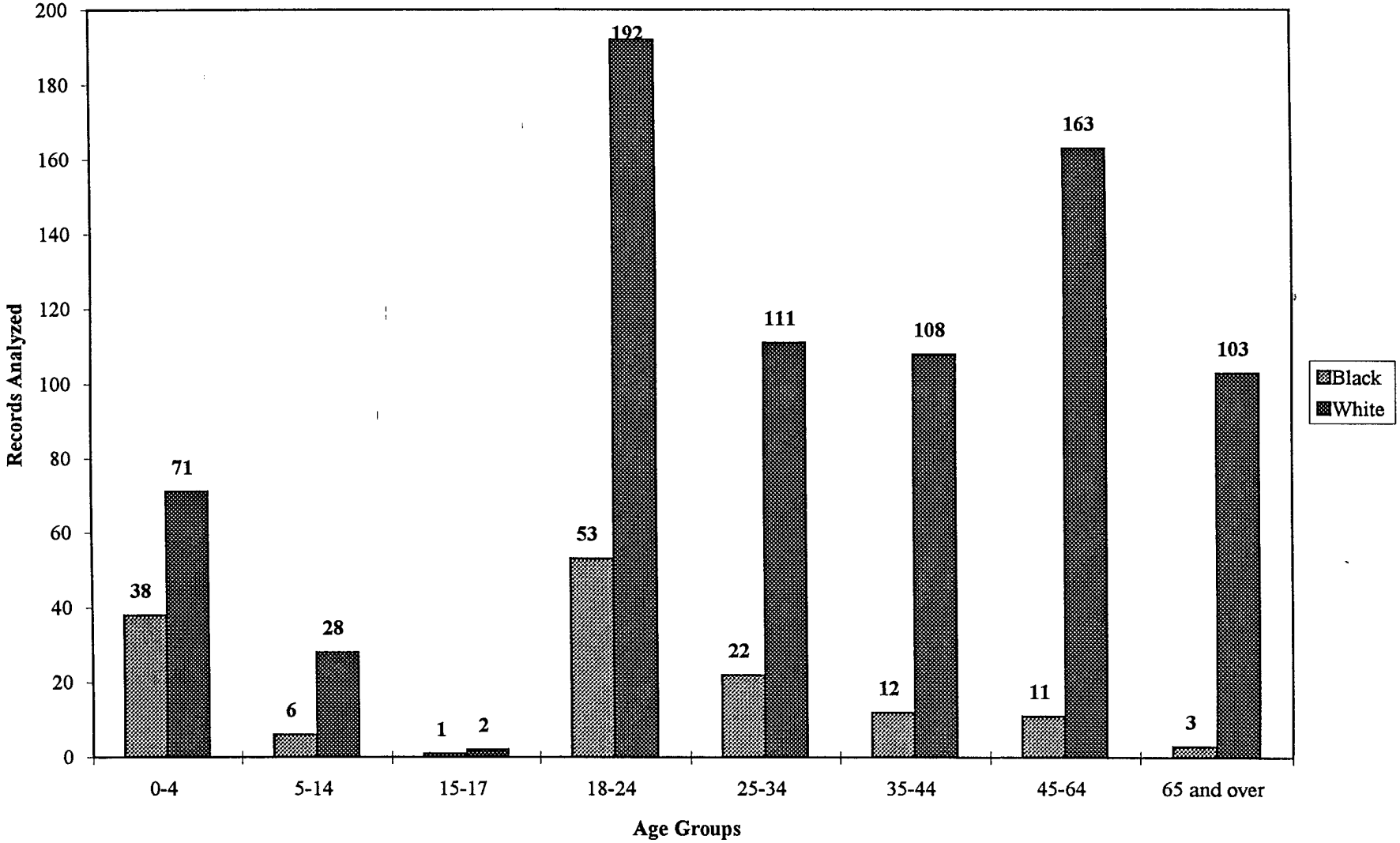
Records Analyzed per 100,000, confidence interval in parentheses

Race	1993	1994	1995
Black	23.56 (12.37, 34.76)	37.66 (23.21, 52.12)	35.16 (21.12, 49.19)
White	66.22 (57.18, 75.26)	65.9 (56.88, 74.91)	56.81 (48.20, 65.43)

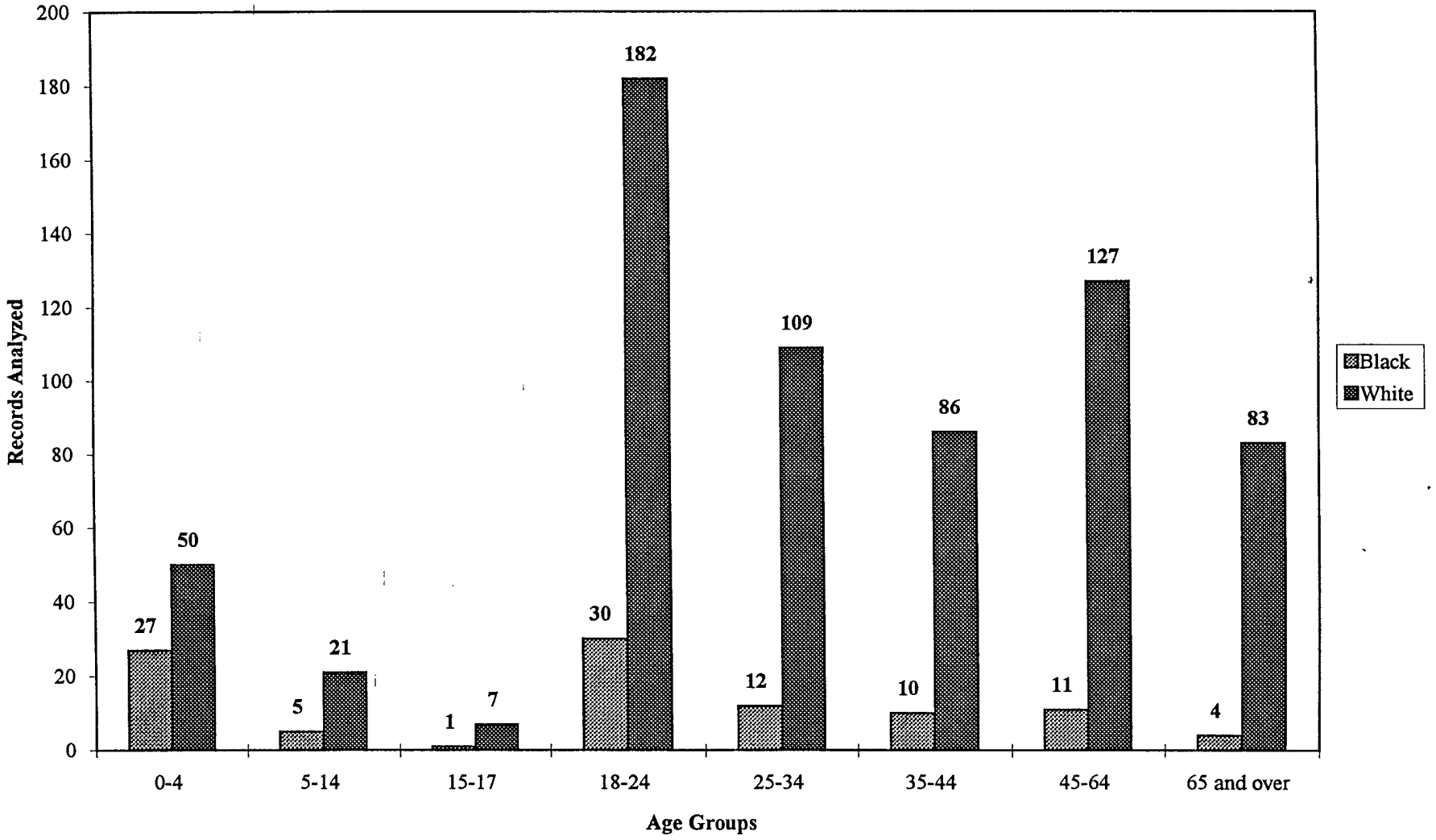
Appendix I
Age Group Dispersion
ICD-9-CM 550
Inguinal Hernia

	1993	1994	1995			1993	1994	1995
	Black	Black	Black			White	White	White
0-4	38	27	26		0-4	71	50	59
5-14	6	5	5		5-14	28	21	24
15-17	1	1	1		15-17	2	7	4
18-24	53	30	24		18-24	192	182	164
25-34	22	12	15		25-34	111	109	96
35-44	12	10	8		35-44	108	86	76
45-64	11	11	8		45-64	163	127	100
65 and ove	3	4	2		65 and ove	103	83	60
	146	100	89			778	665	583
Gender					Gender			
Male	105	88	74		Male	726	625	541
Female	21	12	15		Female	52	40	42

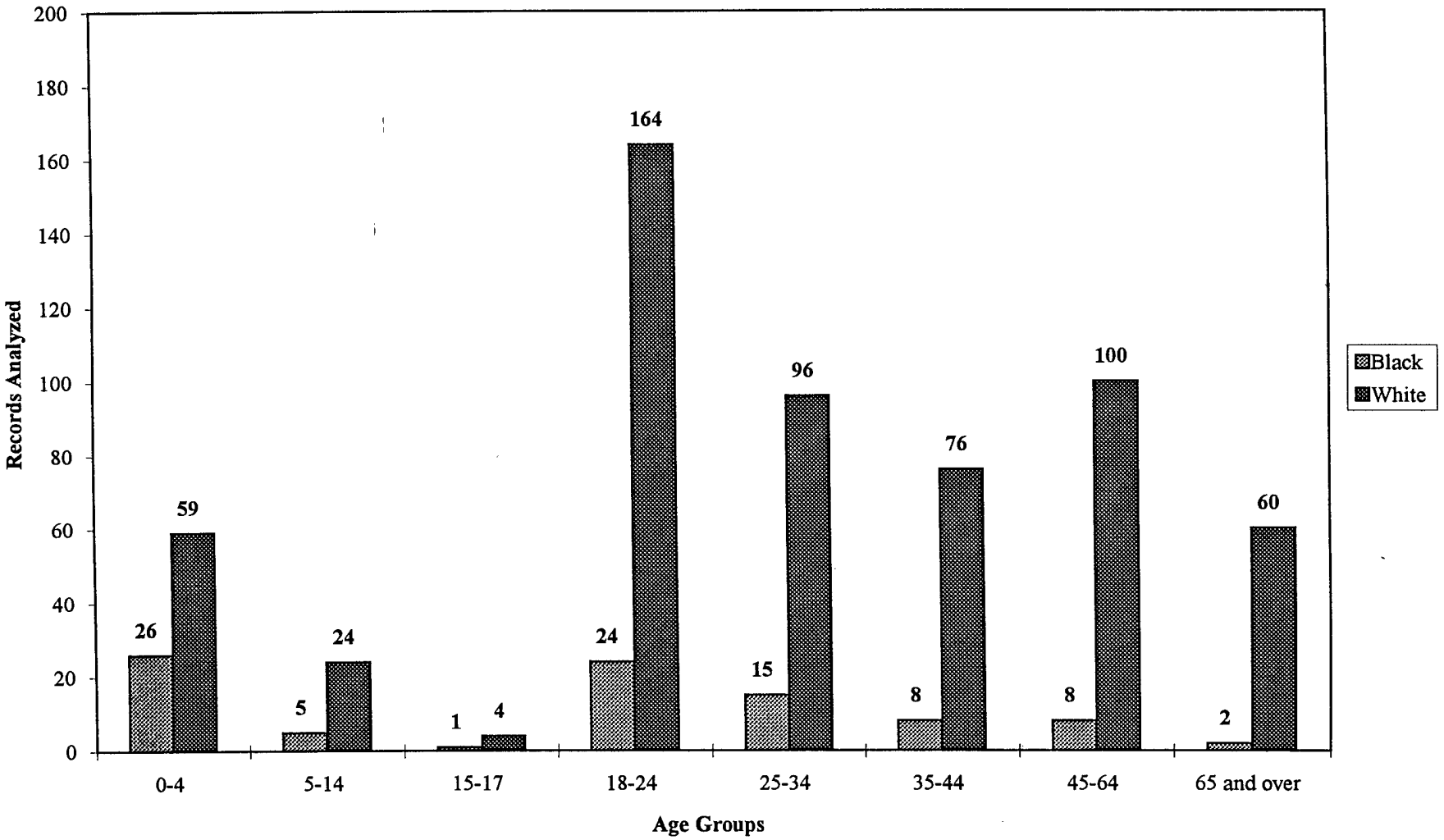
ICD-9-CM (550) Inguinal Hernia 1993



ICD-9-CM (550) Inguinal Hernia 1994



ICD-9-CM (550) Inguinal Hernia 1995



Appendix I
CHI Square Calculation
ICD-9-CM 550
Inguinal Hernia

Principle Diagnosis 550 Inguinal Hernia - 1993						
		w/disease	wo/disease			
	Black	146	72002	72148		
	White	778	310321	311099		
		924	382323	383247		
	(expected	173.95	71974.05			
		750.05	310348.95			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		146	173.95	-27.95	781.2025	4.49096
		778	750.05	27.95	781.2025	1.041534
		72002	71974.05	27.95	781.2025	0.010854
		310321	310349	-27.95	781.2025	0.002517
						5.545865
Principle Diagnosis 550 Inguinal Hernia - 1994						
		w/disease	wo/disease			
	Black	100	68931	69031		
	White	665	297875	298540		
		765	366806	367571		
	(expected	143.67	68887.33			
		621.33	297918.67			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		100	143.67	-43.67	1907.069	13.27395
		665	621.33	43.67	1907.069	3.069333
		68931	68887.33	43.67	1907.069	0.027684
		297875	297918.7	-43.67	1907.069	0.006401
					x(2)	16.37737
Principle Diagnosis 550 Inguinal Hernia - 1995						
		w/disease	wo/disease			
	Black	89	68180	68269		
	White	583	293367	293950		
		672	361547	362219		
	(expected	126.65	68142.35			
		545.35	293404.65			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		89	126.65	-37.65	1417.523	11.19244
		583	545.35	37.65	1417.523	2.599289
		68180	68142.35	37.65	1417.522	0.020802
		293367	293404.7	-37.65	1417.523	0.004831
					x(2)	13.81736

Appendix I
Confidence Interval Calculation
ICD-9-CM 550
Inguinal Hernia

1993								
	Black	146	sqrt	12.08	Black pop	72148		
	White	778	sqrt	27.89	White pop	311099		
Black					White			
1	146/372148x100000=		202.36		1	778/311099x100000=		250.08
2	12.08x1.96=		23.68		2	27.89x1.96=		54.66
3	146+23.68+		169.68		3	778+54.66=		832.66
4	146-23.68=		122.32		4	778-54.66=		723.34
5	100000/72148=		1.39		5	100000/311099=		0.32
CI					**CI**			
6	1.39x169.68=		235.18		6	.32x832.66=		267.65
7	1.39x122.32=		169.54		7	.32x723.34=		232.51
1994								
	Black	100	sqrt	10	Black pop	69031		
	White	665	sqrt	25.78	White pop	298540		
Black					White			
1	144.86				1	222.75		
2	19.60				2	50.53		
3	119.60				3	715.53		
4	80.40				4	614.47		
5	1.45				5	0.33		
CI					**CI**			
6	173.26				6	239.68		
7	116.47				7	205.83		
1995								
	Black	89	sqrt	9.43	Black pop	68269		
	White	583	sqrt	24.14	White pop	293950		
Black					White			
1	130.37				1	198.33		
2	18.48				2	47.31		
3	107.48				3	630.31		
4	70.52				4	535.69		
5	1.46				5	0.34		
CI					**CI**			
6	157.44				6	214.43		
7	103.29				7	182.24		

Appendix I

Odds Ratio Calculation

ICD-9-DM 550

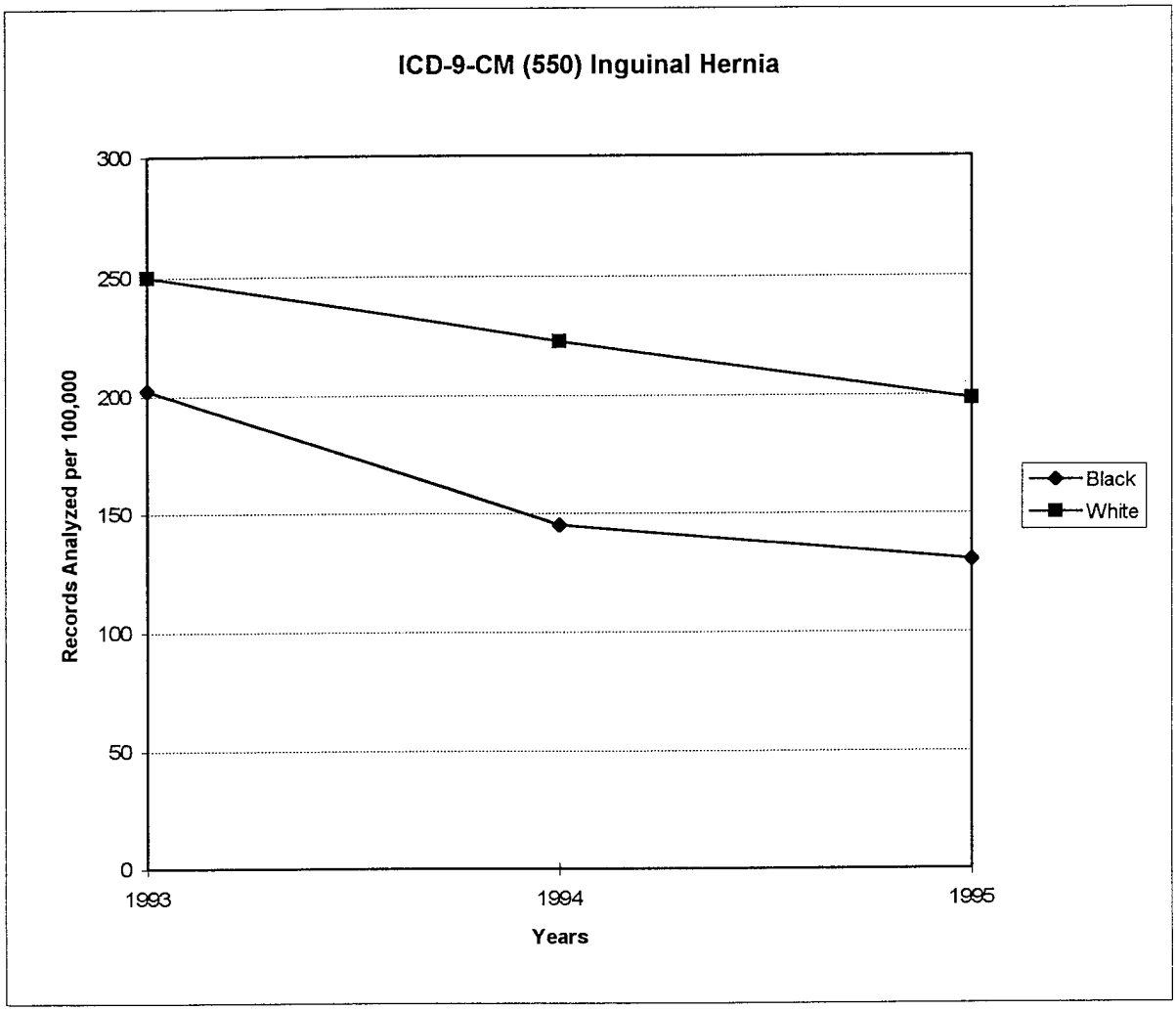
Inguinal Hernia

Year	Race	Records	R/population	Rate	Odds Ratio
93	B	146	72148	0.002024	
	W	778	311099	0.002501	1.23581204
	BM	105	39684	0.002646	
	WM	726	182397	0.00398	1.50433677
	BF	21	31129	0.000675	1.66969089
	WF	52	128702	0.000404	
	BF	21	31129	0.000675	
	BM	105	39684	0.002646	3.92210967
	WF	52	128702	0.000404	
	WM	726	182397	0.00398	9.85146643
94	B	100	69031	0.001449	
	W	665	298540	0.002228	1.5376705
	BM	88	38144	0.002307	
	WM	625	171500	0.003644	1.57964484
	BF	12	30887	0.000389	1.23391718
	WF	40	127040	0.000315	
	BF	12	30887	0.000389	
	BM	88	38144	0.002307	5.93814667
	WF	40	127040	0.000315	
	WM	625	171500	0.003644	11.574344
95	B	89	68269	0.001304	
	W	583	293950	0.001983	1.5213482
	BM	74	37516	0.001972	
	WM	541	167457	0.003231	1.6378675
	BF	15	30753	0.000488	1.46899722
	WF	42	126493	0.000332	
	BF	15	30753	0.000488	
	BM	74	37516	0.001972	4.04400256
	WF	42	126493	0.000332	
	WM	541	167457	0.003231	9.72996238

Appendix I
Odds Ratio Calculation
ICD-9-DM 550
Inguinal Hernia

Year	Race	Records	R/population	Rate	Odds Ratio
1993					
0-4	Black	38	9143	0.004156	1.91922089
0-4	White	71	32786	0.002166	
5-14	Black	6	13134	0.000457	
5-14	White	28	47780	0.000586	1.28279615
15-17	Black	1	2428	0.000412	2.2419687
15-17	White	2	10887	0.000184	
18-24	Black	53	18116	0.002926	1.33871675
18-24	White	192	87857	0.002185	
25-34	Black	22	18065	0.001218	
25-34	White	111	69290	0.001602	1.31542988
35-44	Black	12	12665	0.000947	
35-44	White	108	41288	0.002616	2.76072951
45-64	Black	11	2471	0.004452	
45-64	White	163	20630	0.007901	1.77487772
65+	Black	3	56	0.053571	
65+	White	103	581	0.177281	3.30923695
1994					
0-4	Black	38	8975	0.004234	1.90690259
0-4	White	71	31977	0.00222	
5-14	Black	6	13179	0.000455	
5-14	White	28	47082	0.000595	1.30627416
15-17	Black	1	2479	0.000403	2.0697862
15-17	White	2	10262	0.000195	
18-24	Black	5	15498	0.000323	
18-24	White	151	78744	0.001918	5.94381286
25-34	Black	9	16814	0.000535	
25-34	White	42	65434	0.000642	1.19915233
35-44	Black	8	9054	0.000884	2.23845814
35-44	White	16	40534	0.000395	
45-64	Black	11	1753	0.006275	3.99629978
45-64	White	37	23564	0.00157	
65+	Black	1	79	0.012658	
65+	White	45	943	0.04772	3.76988335
1995					
0-4	Black	38	8486	0.004478	1.92274932
0-4	White	71	30486	0.002329	
5-14	Black	6	13587	0.000442	
5-14	White	28	47238	0.000593	1.34226682
15-17	Black	1	2568	0.000389	1.93438474
15-17	White	2	9935	0.000201	
18-24	Black	10	14482	0.000691	
18-24	White	120	75323	0.001593	2.30718373
25-34	Black	6	16291	0.000368	
25-34	White	36	35431	0.001016	2.75877057
35-44	Black	4	9380	0.000426	
35-44	White	19	40335	0.000471	1.10462378
45-64	Black	6	3377	0.001777	
45-64	White	51	25275	0.002018	1.13568744
65+	Black	2	98	0.020408	
65+	White	31	1416	0.021893	1.07274011

Appendix I



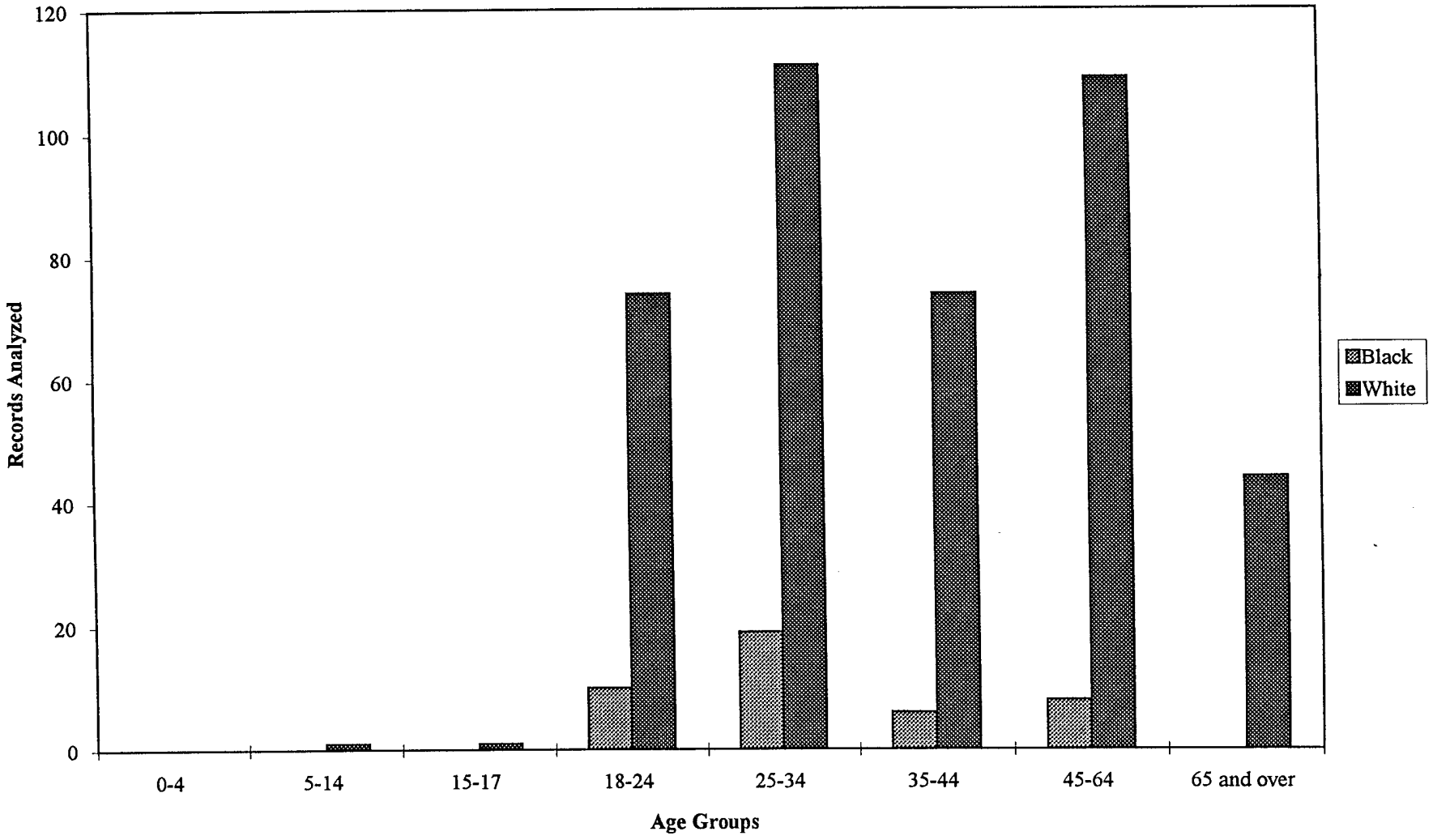
Records Analyzed per 100,000, confidence interval in parentheses

Race	1993	1994	1995
Black	202.36 (169.54, 235.18)	144.86 (116.47, 173.26)	130.37 (103.29, 157.44)
White	250.08 (232.51, 267.65)	222.75 (205.83, 239.68)	198.33 (182.24, 214.43)

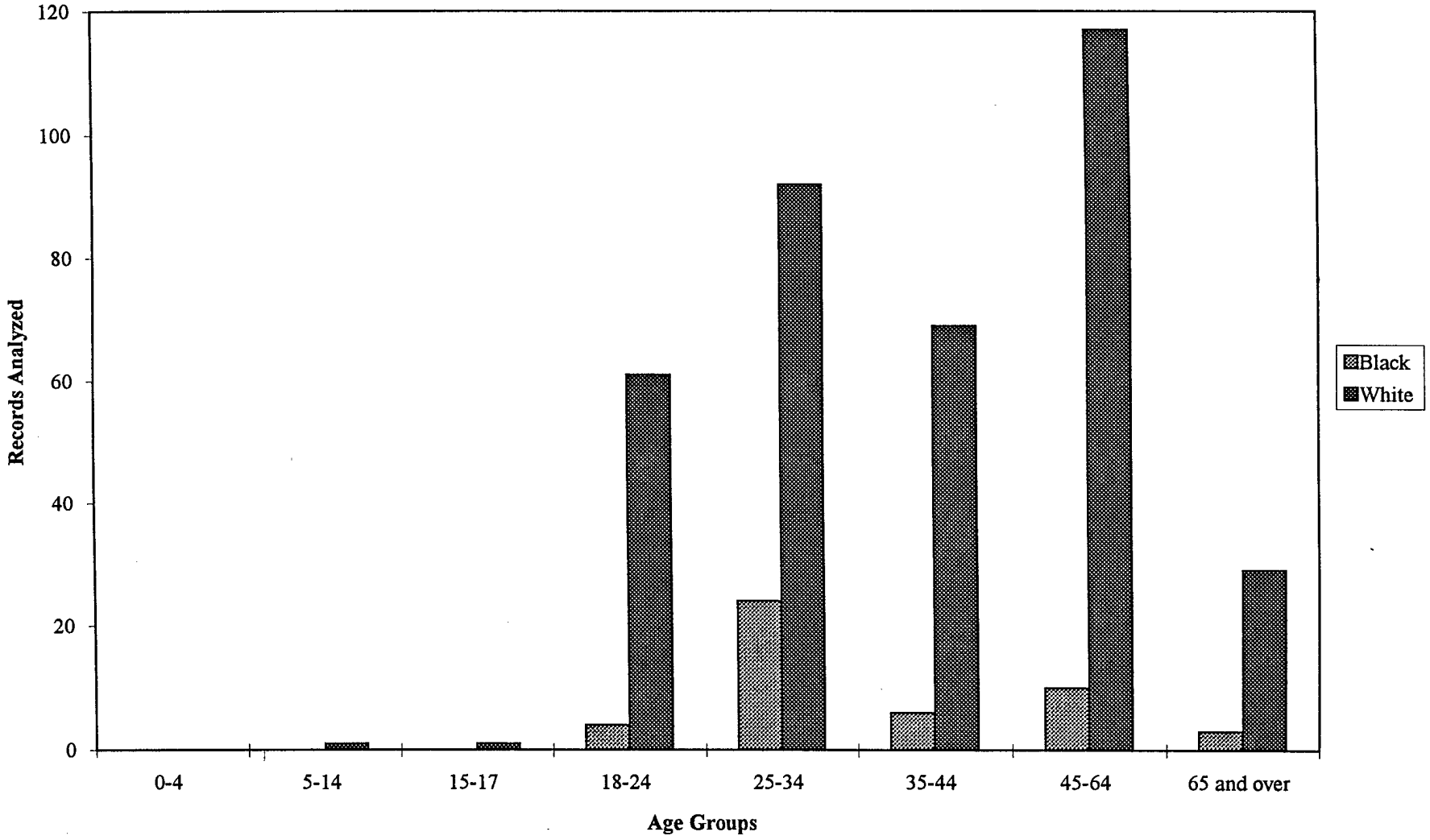
Appendix J
Age Group Dispersion
ICD-9-CM 574
Gallbladder

	1993	1994	1995			1993	1994	1995
	Black	Black	Black			White	White	White
0-4	0	0	0		0-4	0	0	0
5-14	0	0	2		5-14	1	1	0
15-17	0	0	2		15-17	1	1	1
18-24	10	4	7		18-24	74	61	53
25-34	19	24	11		25-34	111	92	95
35-44	6	6	3		35-44	74	69	59
45-64	8	10	7		45-64	109	117	81
65 and ove	0	3	1		65 and ove	44	29	46
	43	47	33			414	370	335
Gender					Gender			
Male	5	9	4		Male	109	98	91
Female	38	38	29		Female	305	272	244

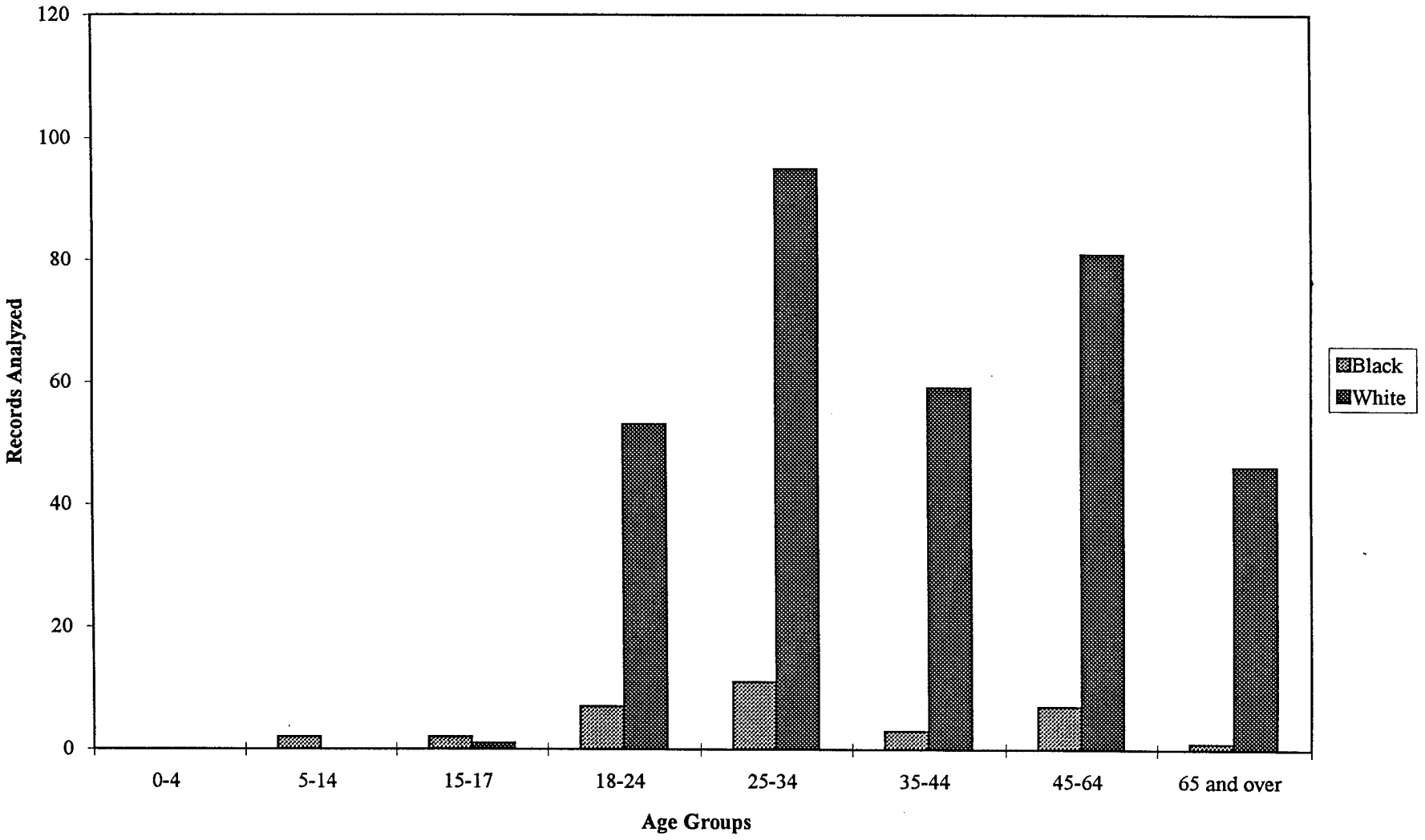
ICD-9-CM (574) Gallbladder 1993



ICD-9-CM (574) Gallbladder 1994



ICD-9-CM (574) Gallbladder 1995



Appendix J
CHI Square Calculation
ICD-9-CM 574
Gallbladder

Principle Diagnosis 574 Gallbladder - 1993						
		w/disease	wo/disease			
	Black	43	72105	72148		
	White	414	310685	311099		
		457	382790	383247		
	(expected	86.03	72061.97			
		370.97	310728.03			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		43	86.03	-43.03	1851.581	21.5225
		414	370.97	43.03	1851.581	4.991188
		72105	72061.97	43.03	1851.581	0.025694
		310685	310728	-43.03	1851.581	0.005959
					x(2)	26.54534
Principle Diagnosis 574 Gallbladder - 1994						
		w/disease	wo/disease			
	Black	47	68984	69031		
	White	370	298170	298540		
		417	367154	367571		
	(expected	78.31	68952.69			
		338.69	298201.31			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		47	78.31	-31.31	980.3161	12.5184
		370	338.69	31.31	980.3161	2.894435
		68984	68952.69	31.31	980.3161	0.014217
		298170	298201.3	-31.31	980.3161	0.003287
					x(2)	15.43034
Principle Diagnosis 574 Gallbladder - 1995						
		w/disease	wo/disease			
	Black	33	68236	68269		
	White	335	293615	293950		
		368	361851	362219		
	(expected	69.36	68199.64			
		298.64	293651.36			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		33	69.36	-36.36	1322.05	19.06069
		335	298.64	36.36	1322.05	4.426901
		68236	68199.64	36.36	1322.05	0.019385
		293615	293651.4	-36.36	1322.05	0.004502
					x(2)	23.51148

Appendix J
Confidence Interval Calculation
ICD-9-CM 574
Gallbladder

1993								
	Black	43	sqrt	6.55	Black pop	72148		
	White	414	sqrt	20.34	White pop	311099		
Black					White			
1	43/72148x100000=		59.60		1	414/311099x100000=		133.08
2	6.55x1.96=		12.84		2	20.34x1.96=		39.87
3	43+12.84=		55.84		3	414+39.87=		453.87
4	43-12.84=		30.16		4	414-39.87=		374.13
5	100000/72148=		1.39		5	100000/311099=		0.32
CI					**CI**			
6	1.39x55.84=		77.39		6	.32x453.86=		145.89
7	1.39x30.16=		41.81		7	.32x374.17=		120.26
1994								
	Black	47	sqrt	6.85	Black pop	69031		
	White	370	sqrt	19.23	White pop	298540		
Black					White			
1	68.09				1	123.94		
2	13.43				2	37.69		
3	60.43				3	407.69		
4	33.57				4	332.31		
5	1.45				5	0.33		
CI					**CI**			
6	87.53				6	136.56		
7	48.64				7	111.31		
1995								
	Black	33	sqrt	5.74	Black pop	68269		
	White	335	sqrt	18.3	White pop	293950		
Black					White			
1	48.34				1	113.96		
2	11.25				2	35.87		
3	44.25				3	370.87		
4	21.75				4	299.13		
5	1.46				5	0.34		
CI					**CI**			
6	64.82				6	126.17		
7	31.86				7	101.76		

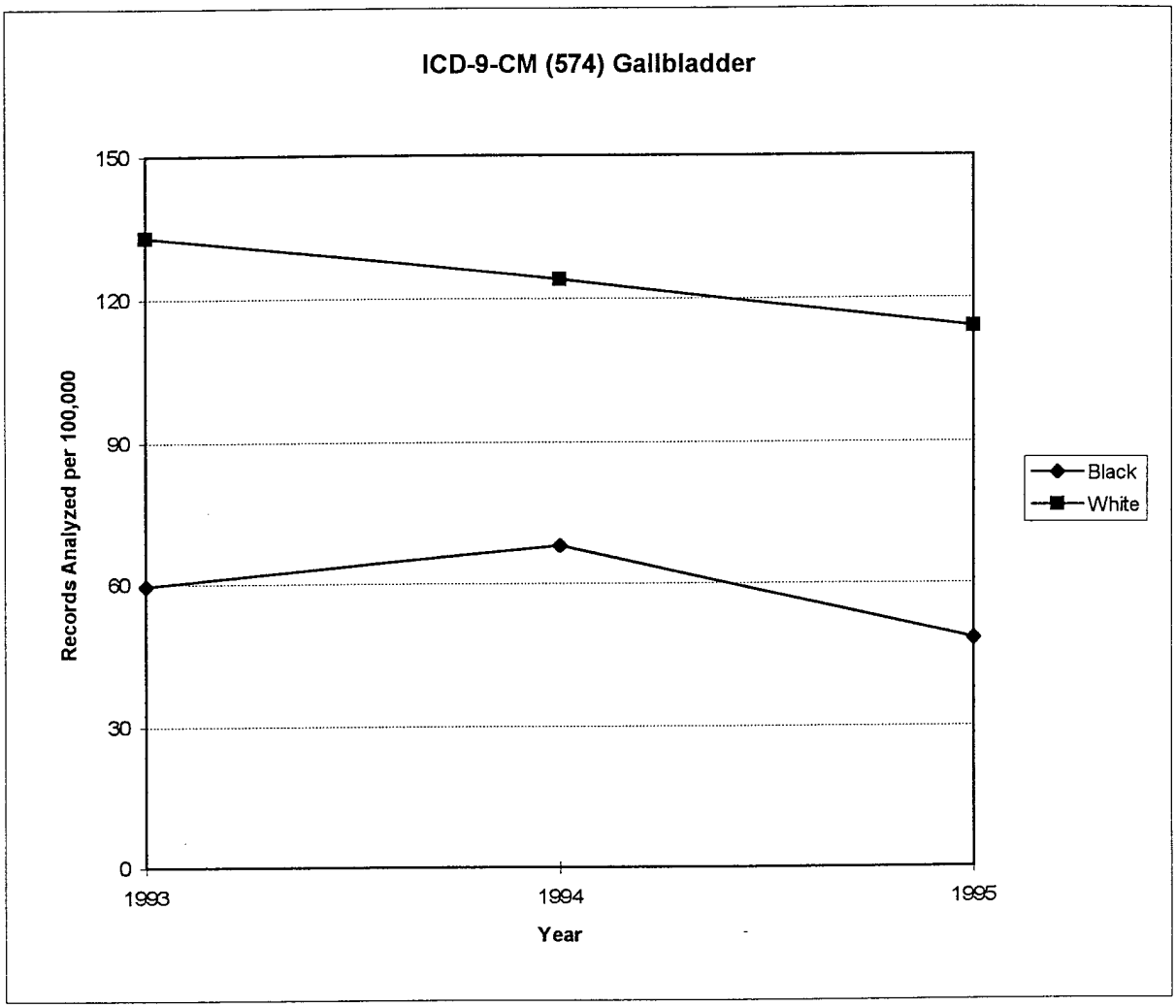
Appendix J
Odds Ratio Calculation
ICD-9-CM 574
Gallbladder

Year	Race	Records	R/population	Rate	Odds Ratio
93	B	43	72148	0.000596	
	W	414	311099	0.001331	2.23283981
	BM	5	39684	0.000126	
	WM	109	182397	0.000598	4.74301222
	BF	38	31129	0.001221	
	WF	305	128702	0.00237	1.94131547
	BF	38	31129	0.001221	9.6886633
	BM	5	39684	0.000126	
	WF	305	128702	0.00237	3.96557106
	WM	109	182397	0.000598	
94	B	47	69031	0.000681	
	W	370	298540	0.001239	1.82031062
	BM	9	38144	0.000236	
	WM	98	171500	0.000571	2.42184127
	BF	38	30887	0.00123	
	WF	272	127040	0.002141	1.7402857
	BF	38	30887	0.00123	5.21424691
	BM	9	38144	0.000236	
	WF	272	127040	0.002141	3.74685139
	WM	98	171500	0.000571	
95	B	33	68269	0.000483	
	W	335	293950	0.00114	2.35765874
	BM	4	37516	0.000107	
	WM	91	167457	0.000543	5.09676514
	BF	29	30753	0.000943	
	WF	244	126493	0.001929	2.04556283
	BF	29	30753	0.000943	8.84437291
	BM	4	37516	0.000107	
	WF	244	126493	0.001929	3.54964767
	WM	91	167457	0.000543	

Appendix J
Odds Ratio Calculation
ICD-9-CM 574
Gallbladder

Year	Race	Records	R/population	Rate	Odds Ratio
1993					
18-24	Black	10	18116	0.000552	
18-24	White	74	87857	0.000842	1.52587045
25-34	Black	19	18065	0.001052	
25-34	White	111	69290	0.001602	1.52312933
35-44	Black	6	12665	0.000474	
35-44	White	74	41288	0.001792	3.78322192
45-64	Black	8	2471	0.003238	
45-64	White	109	20630	0.005284	1.63196195
65+	Black	0	56	0	
65+	White	44	581	0.075731	
1994					
18-24	Black	4	15498	0.000258	
18-24	White	61	78744	0.000775	3.00142868
25-34	Black	24	16814	0.001427	1.01520989
25-34	White	92	65434	0.001406	
35-44	Black	6	9054	0.000663	
35-44	White	69	40534	0.001702	2.56873242
45-64	Black	10	1753	0.005705	1.14889737
45-64	White	117	23564	0.004965	
65+	Black	3	79	0.037975	1.23483195
65+	White	29	943	0.030753	
1995					
18-24	Black	7	14482	0.000483	
18-24	White	53	75323	0.000704	1.45572307
25-34	Black	11	16291	0.000675	
25-34	White	95	35431	0.002681	3.97095764
35-44	Black	3	9380	0.00032	
35-44	White	59	40335	0.001463	4.57353002
45-64	Black	7	3377	0.002073	
45-64	White	81	25275	0.003205	1.54606189
65+	Black	1	98	0.010204	
65+	White	46	1416	0.032486	3.18361582

Appendix J



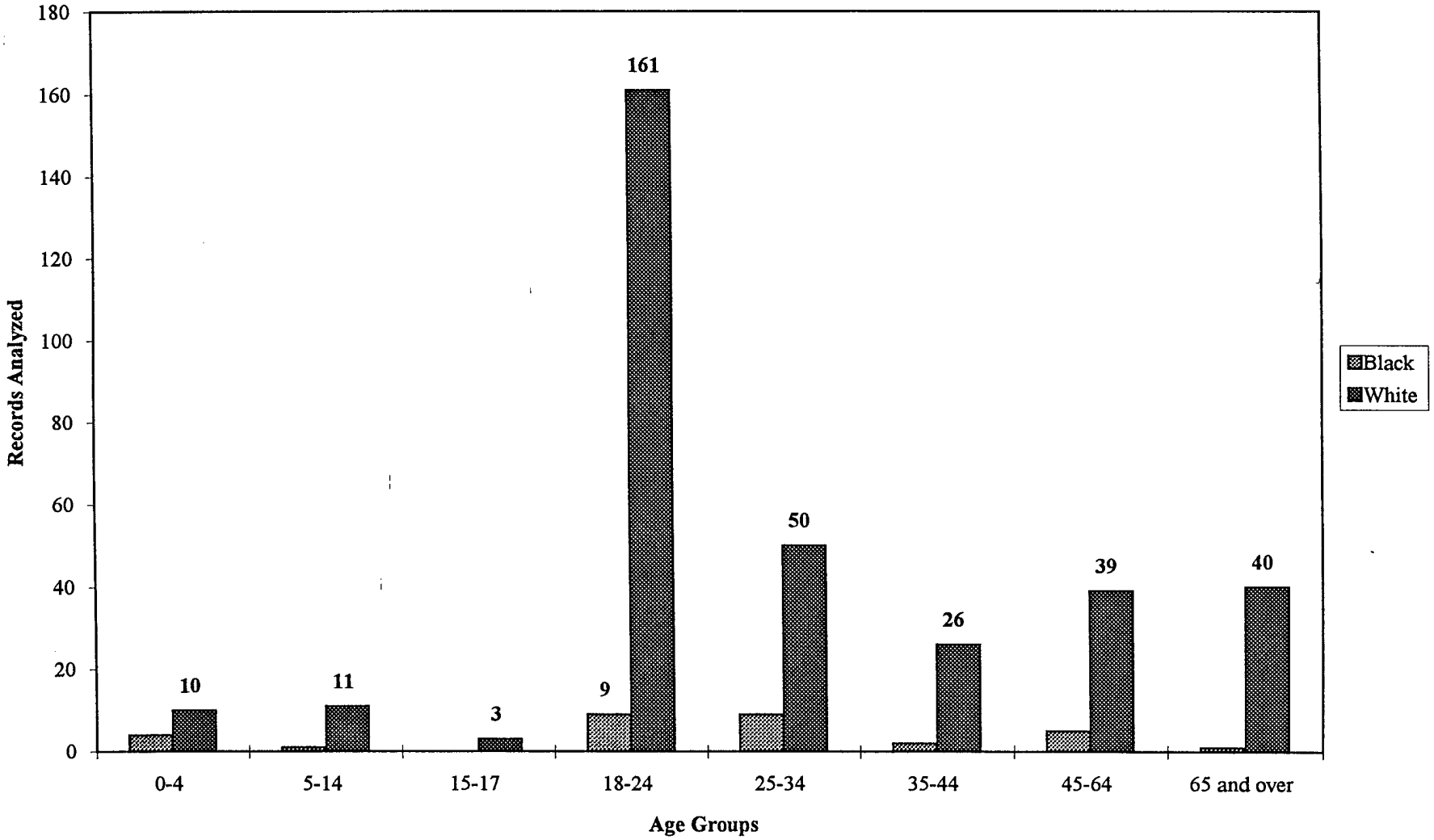
Records Analyzed per 100,000, confidence interval in parentheses

Race	1993	1994	1995
Black	59.6 (41.81, 77.39)	68.09 (48.64, 87.53)	48.34 (31.86, 64.82)
White	133.08 (120.26, 145.89)	123.94 (111.31, 136.56)	113.96 (101.76, 126.17)

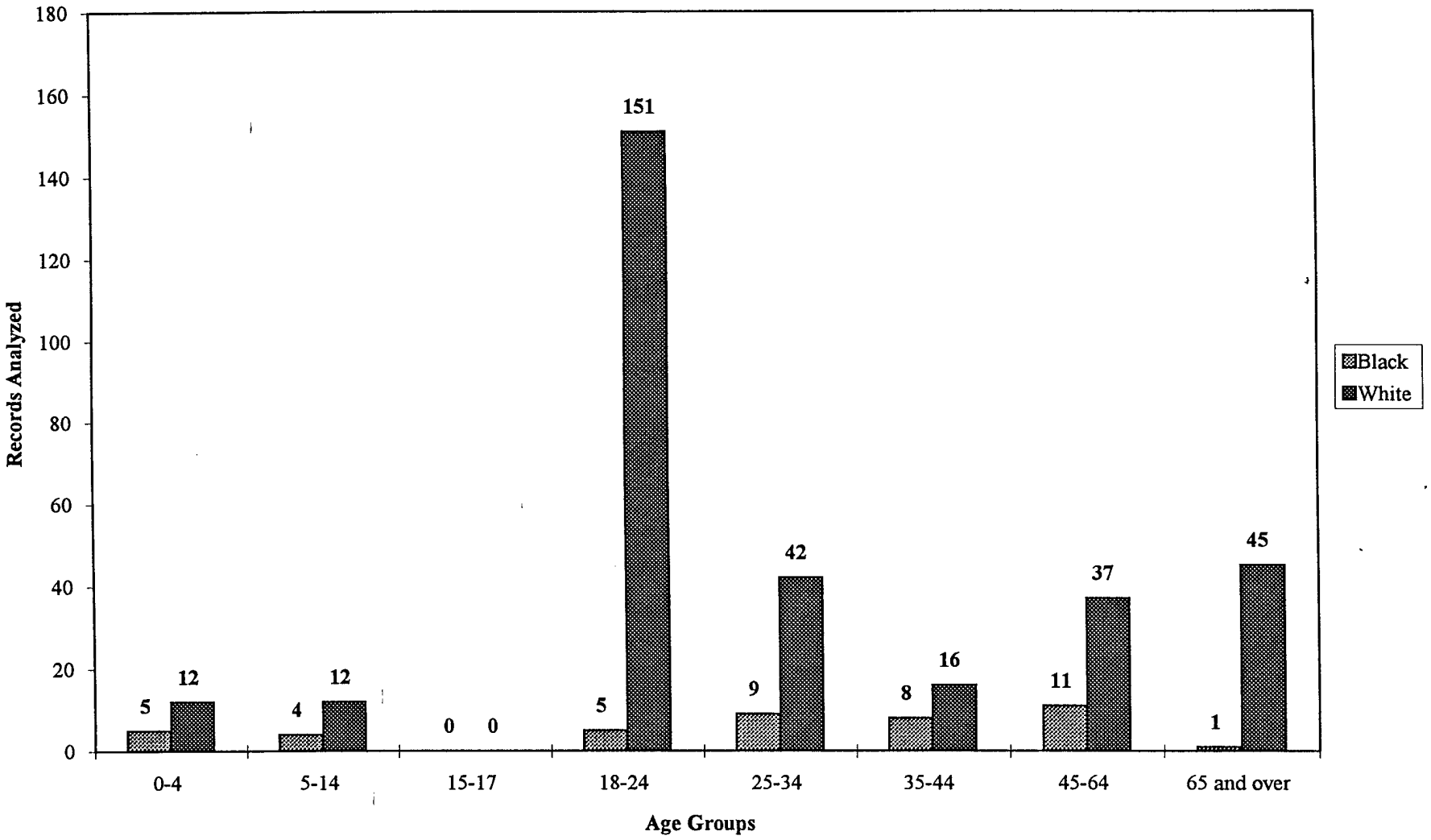
Appendix K
Age Group Dispersion
ICD-9-CM 682
Cellulitis Abscess

	1993	1994	1995			1993	1994	1995
	Black	Black	Black			White	White	White
0-4	4	5	1		0-4	10	12	18
5-14	1	4	0		5-14	11	12	14
15-17	0	0	0		15-17	3	0	4
18-24	9	5	10		18-24	161	151	120
25-34	9	9	6		25-34	50	42	36
35-44	2	8	4		35-44	26	16	19
45-64	5	11	6		45-64	39	37	51
65 and ove	1	1	2		65 and ove	40	45	31
	31	43	29			340	315	293
Gender					Gender			
Male	26	28	21		Male	261	240	218
Female	5	15	8		Female	79	75	75

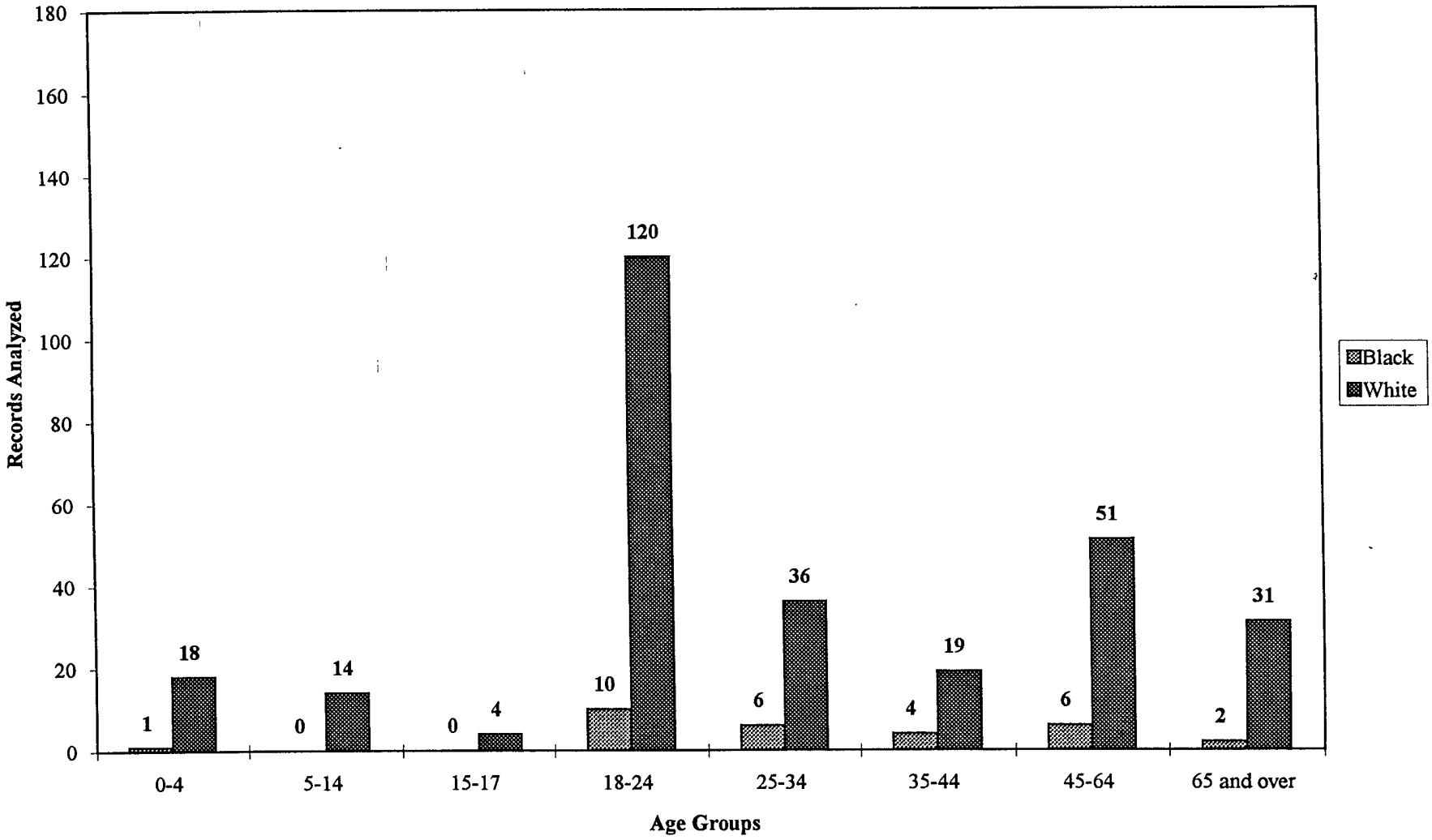
ICD-9-CM (682) Cellulitis & Abscess 1993



ICD-9-CM (682) Cellulitis & Abscess 1994



ICD-9-CM (682) Cellulitis & Abscess 1995



Appendix K
CHI Square Calculation
ICD-9-CM 682
Cellulitis Abscess

Principle Diagnosis 682 Cellulitis & Abscess - 1993						
		w/disease	wo/disease			
	Black	31	72117	72148		
	White	340	310759	311099		
		371	382876	383247		
	(expected	69.84	72078.16			
		301.16	310797.84			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		31	69.84	-38.84	1508.546	21.60002
		340	301.16	38.84	1508.546	5.009117
		72117	72078.16	38.84	1508.546	0.020929
		310759	310797.8	-38.84	1508.546	0.004854
					x(2)	26.63492
Principle Diagnosis 682 Cellulitis & Abscess - 1994						
		w/disease	wo/disease			
	Black	43	68988	69031		
	White	315	298225	298540		
		358	367213	367571		
	(expected	67.23	68963.77			
		290.77	298249.23			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		43	67.23	-24.23	587.0929	8.732603
		315	290.77	24.23	587.0929	2.019097
		68988	68963.77	24.23	587.0929	0.008513
		298225	298249.2	-24.23	587.0929	0.001968
					x(2)	10.76218
Principle Diagnosis 682 Cellulitis & Abscess - 1995						
		w/disease	wo/disease			
	Black	29	68240	68269		
	White	293	293657	293950		
		322	361897	362219		
	(expected	60.69	68208.31			
		261.31	293688.69			
		O	E	O-E	(O-E)^2	(O-E)^2/E
		29	60.69	-31.69	1004.256	16.54731
		293	261.31	31.69	1004.256	3.84316
		68240	68208.31	31.69	1004.256	0.014723
		293657	293688.7	-31.69	1004.256	0.003419
					x(2)	20.40861

Appendix K
Confidence Interval Calculation
ICD-9-CM 682
Cellulitis Abscess

1993								
	Black	31	sqrt	5.56	Black pop	72148		
	White	340	sqrt	18.43	White pop	311099		
Black					White			
1	31/72148x100000=		42.97		1	340/311099x100000=		109.29
2	5.56x1.96=		10.90		2	18.43x1.96=		36.12
3	31+10.90=		41.90		3	340+36.12=		376.12
4	31-10.90=		20.10		4	340-36.12=		303.88
5	100000/72148=		1.39		5	100000/311099=		0.32
CI					**CI**			
6	1.39x41.90=		58.07		6	.32x376.12=		120.90
7	1.39x20.10=		27.86		7	.32x303.88=		97.68
1994								
	Black	43	sqrt	6.55	Black pop	69031		
	White	315	sqrt	17.74	White pop	298540		
Black					White			
1	62.29				1	105.51		
2	12.84				2	34.77		
3	55.84				3	349.77		
4	30.16				4	280.23		
5	1.45				5	0.33		
CI					**CI**			
6	80.89				6	117.16		
7	43.69				7	93.87		
1995								
	Black	29	sqrt	5.38	Black pop	68269		
	White	293	sqrt	17.11	White pop	293950		
Black					White			
1	42.48				1	99.68		
2	10.54				2	33.54		
3	39.54				3	326.54		
4	18.46				4	259.46		
5	1.46				5	0.34		
CI					**CI**			
6	57.92				6	111.09		
7	27.03				7	88.27		

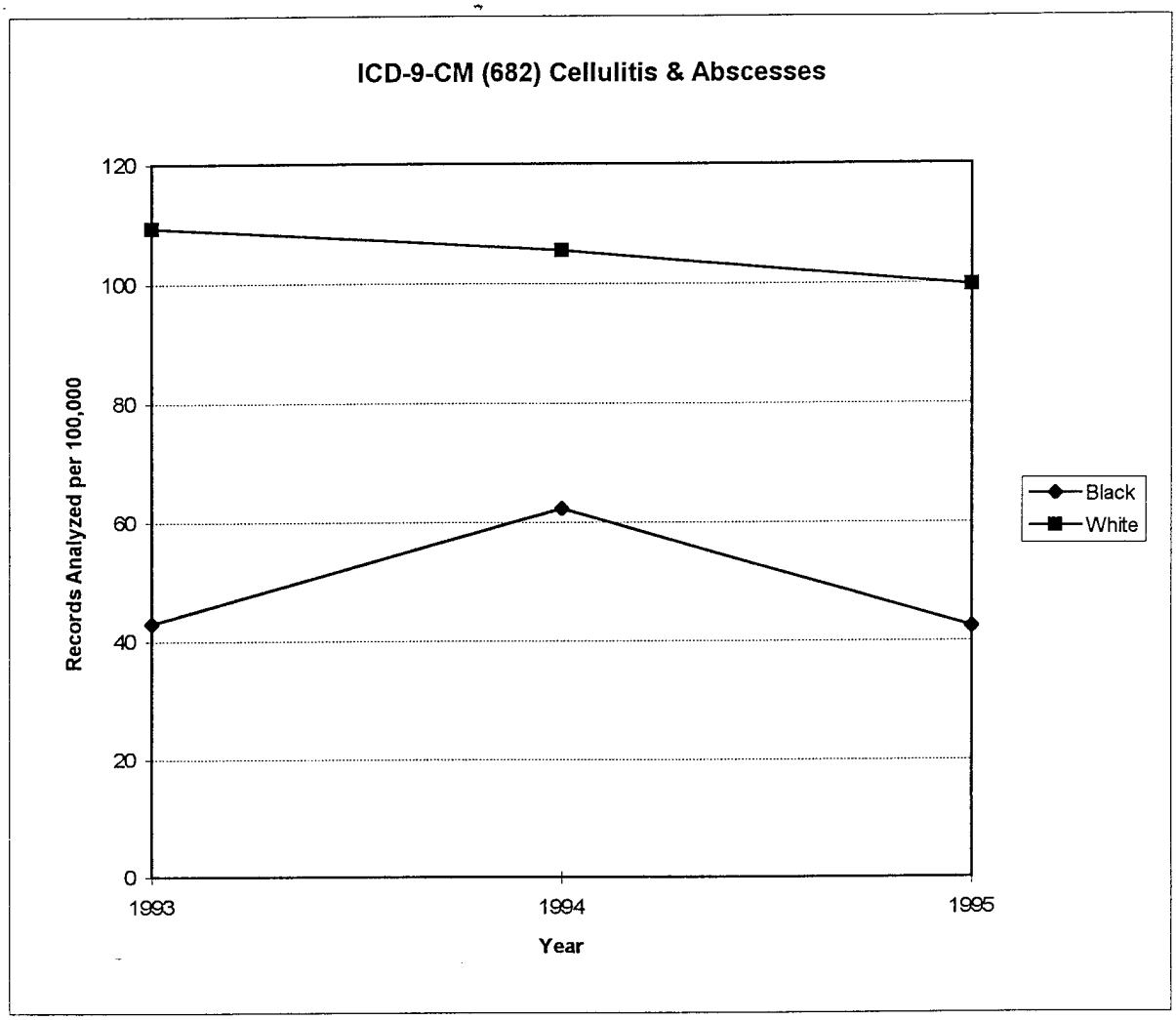
Appendix K
Odds Ratio Calculation .
ICD-9-CM 682
Cellulitis Abscess

Year	Race	Records	R/populati	Rate	Odds Rati
93	B	31	72148	0.00043	
	W	340	311099	0.001093	2.543565
	BM	26	39684	0.000655	
	WM	261	182397	0.001431	2.184062
	BF	5	31129	0.000161	
	WF	79	128702	0.000614	3.821527
	BF	5	31129	0.000161	
	BM	26	39684	0.000655	4.078994
	WF	79	128702	0.000614	
	WM	261	182397	0.001431	2.331208
94	B	43	69031	0.000623	
	W	315	298540	0.001055	1.693884
	BM	28	38144	0.000734	
	WM	240	171500	0.001399	1.906406
	BF	15	30887	0.000486	
	WF	75	127040	0.00059	1.215641
	BF	15	30887	0.000486	
	BM	28	38144	0.000734	1.511528
	WF	75	127040	0.00059	
	WM	240	171500	0.001399	2.370426
95	B	29	68269	0.000425	
	W	293	293950	0.000997	2.346495
	BM	21	37516	0.00056	
	WM	218	167457	0.001302	2.325682
	BF	8	30753	0.00026	
	WF	75	126493	0.000593	2.279252
	BF	8	30753	0.00026	
	BM	21	37516	0.00056	2.151792
	WF	75	126493	0.000593	
	WM	218	167457	0.001302	2.195626

Appendix K
Odds Ratio Calculation
ICD-9-CM 682
Cellulitis Abscess

Year	Race	Records	R/populati	Rate	Odds Rati
1993					
18-24	Black	9	18116	0.000497	
18-24	White	161	87857	0.001833	3.688666
25-34	Black	9	18065	0.000498	
25-34	White	50	69290	0.000722	1.448421
35-44	Black	2	12665	0.000158	
35-44	White	26	41288	0.00063	3.98772
45-64	Black	5	2471	0.002023	1.070365
45-64	White	39	20630	0.00189	
65+	Black	1	56	0.017857	
65+	White	40	581	0.068847	3.855422
1994					
18-24	Black	5	15498	0.000323	
18-24	White	151	78744	0.001918	5.943813
25-34	Black	9	16814	0.000535	
25-34	White	42	65434	0.000642	1.199152
35-44	Black	8	9054	0.000884	2.238458
35-44	White	16	40534	0.000395	0.446736
45-64	Black	11	1753	0.006275	3.9963
45-64	White	37	23564	0.00157	
65+	Black	1	79	0.012658	
65+	White	45	943	0.04772	3.769883
1995					
18-24	Black	10	14482	0.000691	
18-24	White	120	75323	0.001593	2.307184
25-34	Black	6	16291	0.000368	
25-34	White	36	35431	0.001016	2.758771
35-44	Black	4	9380	0.000426	
35-44	White	19	40335	0.000471	1.104624
45-64	Black	6	3377	0.001777	
45-64	White	51	25275	0.002018	1.135687
65+	Black	2	98	0.020408	
65+	White	31	1416	0.021893	1.07274

Appendix K



Records Analyzed per 100,000, confidence interval in parentheses

Race	1993	1994	1995
Black	42.97 (27.86, 58.07)	62.29 (43.69, 80.89)	42.48 (27.03, 57.92)
White	109.29 (97.68, 120.90)	105.51 (93.87, 117.16)	99.68 (88.27, 111.09)